THE AUSTRALASIAN JOURNAL OF **PHARMACY**

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OCTOBER 30, 1958

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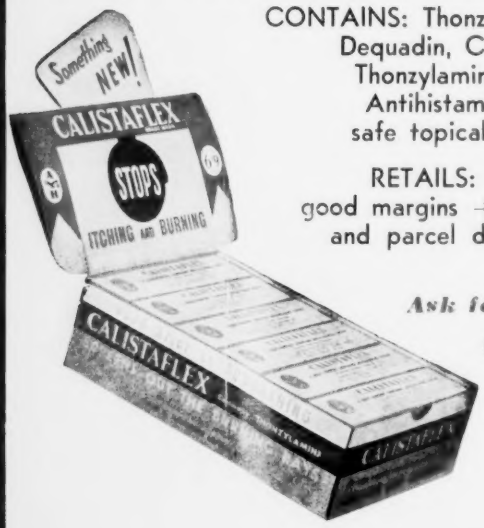

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Preliminary Examination:
Commences November 19.
Entries close November 5.

Final Examination:
Commences November 17.

Intermediate Examination:
November 3.

By Order of the Board,

F. C. KENT,
Registrar.

360 Swanston Street,
Melbourne.

PHARMACY BOARD OF NEW SOUTH WALES

Watch this column for advice concerning

the next Qualifying Examination

P. E. COSGRAVE,

Registrar, Pharmacy Board of N.S.W.,
52 Bridge Street,
Sydney.

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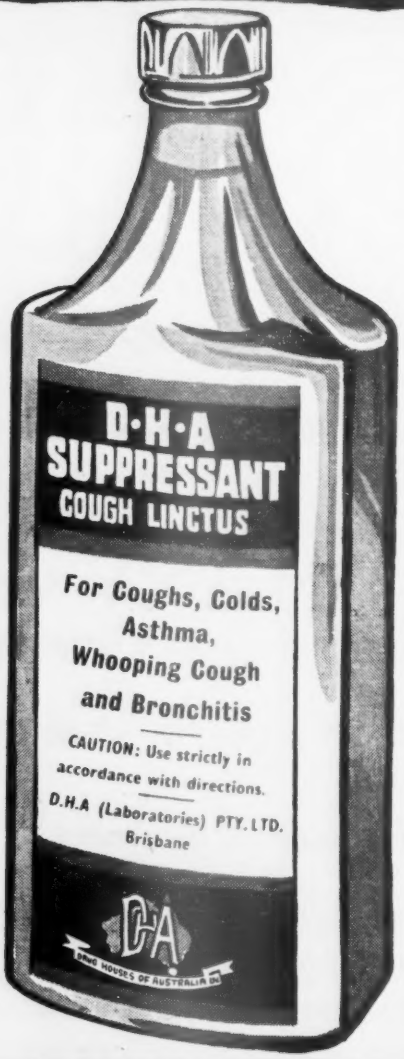

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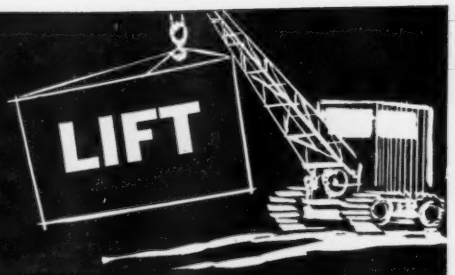

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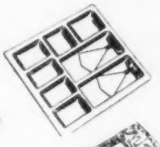

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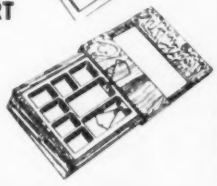

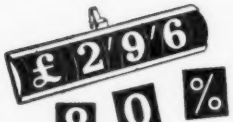

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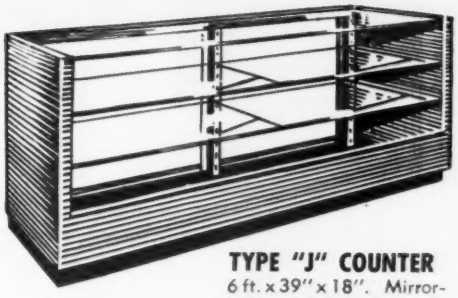

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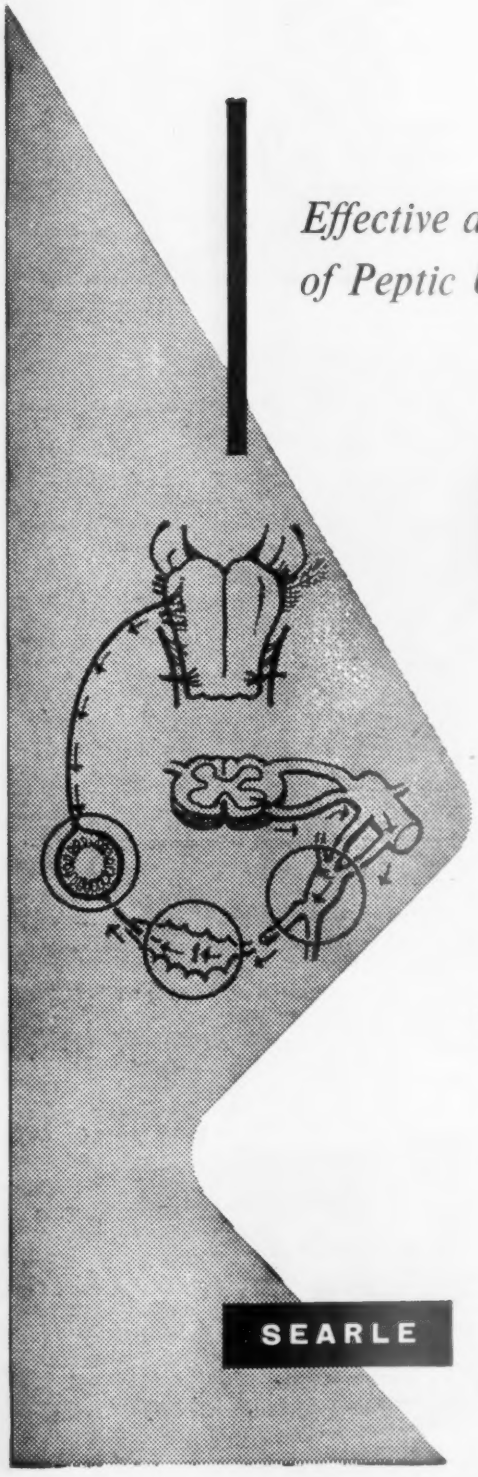

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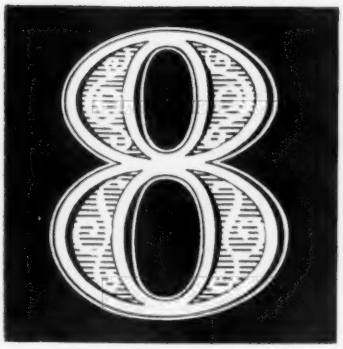

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'SICCOLAM'
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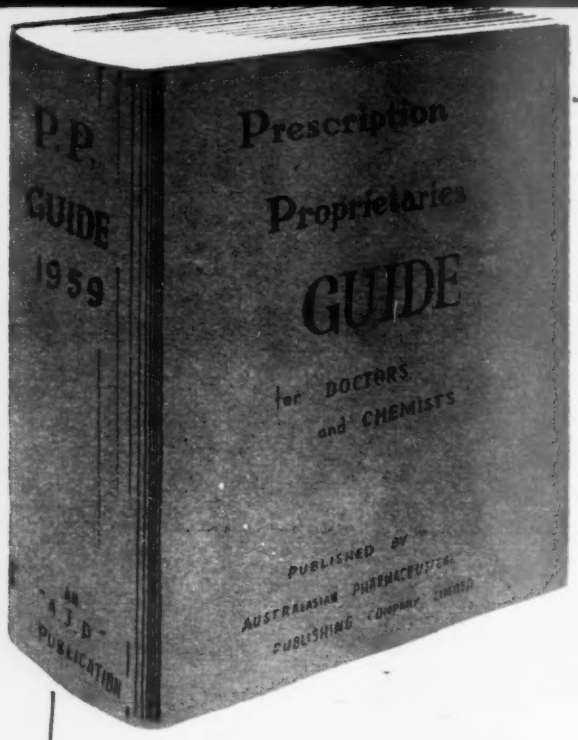

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BLOCK LETTERS PLEASE

Editorial

New Series: Vol. 39—No. 466
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October 30, 1958

The Metric System

Guest Editorial by Dr. P. N. O'Donnell, M.D., B.S. Melb., M.R.A.C.P.,
Royal Melbourne Hospital

"Thou shalt not have in thine House divers measures
But thou shalt have a perfect and just weight."
Deuteronomy, Chapter XXV.

The Biblical Scribe who expounded this philosophy would no doubt have offered the same advice if he were writing about present-day conditions.

In his time, standards of weights and measures were the responsibility of individuals rather than of the community, and no over-all standards appeared to exist.

The earliest weights recorded were those of the early Egyptians and these were composed of limestone. Such a material was easy to cut to certain sizes, but it was not durable. Later, weights were composed of hard stone and precious metals.

Further, the weights of those days were based on natural units such as the length of the foot, the breadth and span of the hand, the length of the arm, the weight of a grain of wheat or a sac of wool.

Standardisation under such circumstances was almost impossible to achieve and, further, tribes and communities could never have reached universal agreement.

Since the days of the early Egyptians, as man has advanced and broadened his knowledge, he has acquired from the many civilisations which have influenced his history, aspects of weights and measures which he has integrated into several systems.

Similarly, as aspects of trade have achieved dominance at certain periods of his development, man has assimilated various trade measures into common parlance. Thus from the Greeks and Romans, from the Arabs and Persians, from the French and Venetians, as well as from the grain merchants, the wool merchants and the dealers in precious stones and metals, terms, symbols and weights have been absorbed to produce even more "divers measures."

The time is long overdue to create order out of chaos. The metrological muddling which has increased in quantity and quality as history has passed by, makes it urgently necessary to revise our standards and simplify our systems.

It will be accepted, without question, that weights and measures of suitable standard are essential in every aspect of our daily lives. The point at issue is whether we require such a variety of standards, and whether our standards should have universal acceptance, and be common to all. At present, many standards, such as the pint, vary by trade and by locality.

Although a universal system of measurement had been suggested by enlightened people as early as the seventeenth century, there was no progress in such clarification until the advent of the French Revolution towards the end of the eighteenth century. Perhaps the prevailing spirit of restlessness and innovation inspired what was believed would be a universal, scientific and logical system of weights and measures. During this turbulent period, out of the work of the French Academy of Science, the metre was born. Even in this changing period of turmoil and upheaval it was fifty years before the metric system was officially adopted in France.

In spite of this major advance in metrology, little progress was made in clarification outside France. This indifference and, indeed, hostility was probably part of the pattern of distrust of all things French which pervaded Europe for the next fifty years.

The metric controversy has been smouldering for over a century in British-speaking countries. Some persons of authority are fanatically opposed to it, others just as dogmatically press for its introduction.

Informed opinion everywhere indicates that the metric system is the simplest, most accurate, most economical and most desirable system once it is established.

It is not perfect, it has its limitations and its drawbacks, but it appears to be the most suitable system yet devised to meet our terms and conditions. Science uses the metric system; commerce uses the imperial system. Medicine and pharmacy use both systems and, as if this were not enough, add other systems of their own.

Medicine and pharmacy have gradually developed from the local to the national level and are now advancing to the international sphere. Cannot we, as we strive for international development, follow the lead of science and boldly accept the metric system?

Its universal adoption by the scientists has shown us the way.

THE MONTH

News of Pharmaceutical Events at Home and Abroad

Overdose of Poison Causes Death

The fact that a bottle of poison had not been so labelled at the Ballina District Hospital was a link in the chain of circumstances that led to the death of a two-year-old boy, the District Coroner (Mr. Herron) said at an inquest on September 3.

He found that the child died from an overdose of poison accidentally administered to him while a patient at the hospital.

The poison—Oil of Chenapodium—was not labelled as a poison as required by law. Mr. Herron said there could be no doubt that this circumstance was a factor leading to the death of the child.

He said also that it appeared from the evidence of Sister Baker and Nurse Butler that instructions regarding treatment for the boy were given and received in circumstances which resulted in Nurse Butler's mistaken belief that she was to administer the Oil of Chenapodium.

Sister Baker said she told Nurse Butler that the child was to have an enema and a dram of castor oil afterwards. Later she asked Nurse Butler if she had given the castor oil and Nurse Butler replied Oil of Chenapodium. The Oil of Chenapodium had never been labelled as "Poison," Sister Baker said.

British Test Case

COURT RULING ON "C.O." LINES

Far-reaching changes—even the disappearance of the old-style pharmacy in Britain—have been forecast by newspaper correspondents who have commented on a ruling in London on October 13 by the new Restrictive Trade Practices Court set up to probe monopolies.

The Court declared void a trade agreement allowing only chemists to sell patent medicines, ruling that there was a trade ring of pharmaceutical manufacturers selling only through chemists against the public interest.

At the first sitting of the Court last April, it was stated that there were 39 cases in course of preparation to come before the Court. The Court decided to hear first the case relating to the Chemists' Federation. The hearing of this test case lasted six days, and judgment was given on October 13.

The Court had then still to consider other alleged restrictions by chemists against firms not in the British Chemists' Federation. This was described by one London newspaper as "a trade ring which 10,000 chemists have operated for more than 20 years."

The Court decision applies to the products of 144 manufacturers and covers 4,000 items from corn plasters to cod liver oil and cough mixtures. Such lines may henceforth be sold by grocers and other non-pharmaceutical retailers.

One correspondent, pointing out that people would need to go to chemists only for prescriptions or dangerous drugs, said that Britain was likely to American-style drug-stores, with soda fountains, and with the medicine counter in one corner.

Under the trade agreement operated by the members of the Chemists' Federation, it drew up a list of patent medicines which only chemists might sell. If a manufacturer sold his products to any other retailer, the chemists refused to handle his goods.

The Federation claimed that chemists were qualified to advise and warn customers about medicines, while other shopkeepers were not.

The Federal Pharmaceutical Public Relations Secretariat has written to London for further information about this test case.

British Pharmacopoeia, 1958

Amendments Official From September 1

A four-page leaflet carrying a number of amendments to the B.P., 1958, has been issued by the British Pharmacopoeia Commission, London.

A memorandum from the Secretary of the Commission under date August 22, advises that these amendments, which were to be announced in the Official Gazettes on August 29, became official from September 1.

Copies of the amendments leaflet may be obtained from the Secretary, British Pharmacopoeia Commission, General Medical Council Office, Hallam street, London, W.1.

Request is made for a stamped addressed envelope to be enclosed. This would apply to United Kingdom enquiries. It is suggested that a postal coupon for one rate of postage be forwarded with any such application from Australia or New Zealand.

SCIENCE SECTION

EDITED BY A. T. S. SISSONS, B.Sc. F.P.S.

ARTICLES

- Radio Isotopes and Their Use in Steroid Metabolism.
- "Radioactive Isotopes".
- The Bactericidal Effect of Some Ophthalmic Vehicles.
- A Study of the Stability of Atropine Eye Drops—A.P.F.
- The Use of the Spectrophotometer in Pharmaceutical Analysis.
- Kerosene Poisoning—Emesis, Gastric Lavage or Neither?
- Pharmacy Whither?
- Developmental Projects in Hospital Pharmacy.
- The Role of the Ethical Manufacturer in Modern Medicine.
- A Balanced Partnership — Science and Business.
- Trends in Pharmacology.
- Tablet Colourings in B.P. 1958.

A.N.Z.A.A.S. ADELAIDE MEETING

SECTION "O," PHARMACEUTICAL SCIENCE

RADIO-ISOTOPES AND THEIR USE IN STEROID METABOLISM

(Department of Pharmacy, University of Sydney)
By Barry T. Brown

The phenomena of radioactivity were first observed by Becquerel in 1896 and soon after the work of Madame Curie led to the discovery of Polonium and Radium. Soon other elements were found that were naturally radioactive, but it was not until 1934 that artificial radioactivity was first observed. Beryllium, boron and aluminium were bombarded with alpha particles from polonium and it was found that positive electrons continued to be emitted after removal of the source of the alpha particles. Since then considerable numbers of artificially radioactive isotopes of many elements have been produced.

The development of atomic reactors in the last decade or so greatly facilitated the production of radio-isotopes. Radio-isotopes are produced by nuclear reactions which are brought about by bombarding targets with neutrons, protons and deuterons. The required isotope must be then separated from the target material—this being usually based on the chemical properties of the elements concerned, as the chemical properties of the isotope and its naturally occurring element are the same. An example is the production at Amersham, in the United Kingdom, of radioactive carbon-14. This is made by irradiating nitrogen with neutrons. The target material, which is aluminium nitride, is sealed in aluminium cans and irradiated in a reactor for about a year. The radioactive carbon-14 is then chemically separated from this active material.

Radioactive atoms are unstable and will break up into atoms of lower molecular weight. During this disintegration, radiations are emitted, being either alpha particles (which in effect consist of helium nuclei) or beta particles (electrons) or gamma radiations (similar to X-rays). It is the emission of radiation during this disintegration which gives isotopes their particular properties.

The instability of isotopes and the difference in the strength of their radiations have prompted the introduction of a number of terms to define these characteristics. The HALF LIFE of an isotope is defined as the time required for the activity of that isotope to fall to half the original activity. For example, the half life of phosphorus-32 is 14 days. A sample of this isotope, say 10 millicuries, will fall to an activity of 5 millicuries after 14 days and to 2.5 milicuries after 28 days and so on.

In radiochemistry the actual **mass** of material being handled is not of great importance—rather the intensity of the radiation is the prime consideration. The unit used to define the quantity of radioactivity is the curie —a sample is said to have one CURIE of radioactivity if it produces 3.7×10^{10} disintegrations (or radiation impulses) per second. This is the number of disintegrations produced by 1 gram of radium. The MILLICURIE (mC) and the MICROCURIE (μC) are fractional units more generally employed. One millicurie is the amount of isotope producing 3.7×10^{7} disintegrating atoms per second. The curie is the quantity of radiation, but to indicate the **strength** of emitted radiation, another term is required—the MeV. For example, radioactive strontium-90 emits a beta radiation of strength 0.61 MeV. Sulphur-35, on the other hand, is a much weaker beta emitter, 0.167 MeV, and hence this radiation is not as penetrating as the strontium beta. However, the nature of the emission, whether it be alpha, beta or gamma, also considerably influences the penetrating power of the radiation. Other units which are used to express the dosage of radiation include the ROENTGEN, which is the quantity of radiation producing ions carrying one electrostatic unit of electricity in a definite weight of air. The maximum permissible limits (m.p.l.) of radiation dosage in man, i.e., the maximum dose of radiation that can be safely tolerated, can be expressed in roentgens per hour. Thus, for the beta radiations from phosphorus-32, the maximum permissible limit is 0.2 r. per 8 hour or 0.012 r. per hour. (This is also expressed 12.0 milliroentgens (m.r.) per hour.)

For **therapeutic** uses in medical treatment, it is important that the radioactive isotope should be absorbed and selectively concentrated in the tissue to be destroyed. In this manner the toxic effects of the radiation can be manifested in a specific location in the body, and not greatly affect other areas. It is well known that phosphorus is selectively concentrated in bone and rapidly growing tissue. Hence the possibility of using radioactive

phosphorus in neoplastic conditions. Similarly iodine is concentrated in thyroid tissue and radio iodine can be used for thyroid tumours.

Probably the most important scientific use of isotopes is as radioactive tracers for research in the biological and medical sciences. For this purpose the function of the isotope is merely to "tag" a molecule and so provide a ready means of detecting and following this particular molecule. In this regard the most versatile single isotope is undoubtedly radioactive carbon-14.

In its simplest form as carbonate, carbon-14 is only of limited interest, and the real need is for the widest possible range of carbon compounds. These must of necessity be prepared either by chemical synthesis or to an increasing extent by biological methods. For instance, the starting point for the synthesis of glycerol is carbon-14 dioxide and Grignard reagent. The radioactive sugars, for example, are synthesised by both chemical and biological methods. The sugar can be specifically labelled in one part of the molecule by chemical synthesis or uniformly labelled with carbon-14 by photosynthesis in leaves which are grown in an atmosphere of carbon-14 dioxide. At present, the catalogue from the Amersham Radiochemical Centre, which is the principal U.K. source for labelled materials, contains over 200 carbon isotope compounds.

Research into the biological actions of steroid hormones has increased greatly in recent years. The importance of these compounds in normal physiology and also the use of the steroid hormones in the treatment of cancer prompted the synthesis of steroids containing a radioactive carbon in the nucleus. By using such compounds it should be possible to use doses of steroids approaching a physiological level.

Because of difficulty of incorporating a carbon-14 atom into the steroid nucleus by chemical synthesis, early experiments were carried out with the estrogens (the female sex hormones) which had been labelled with radio Iodine-131. Because these compounds were not biologically active, and in fact had different physiological properties to their parent compounds, results obtained with these steroids were treated with suspicion. It was obvious then that steroids containing radioactive carbon or radioactive hydrogen must be used.

The synthesis of radioactive steroids containing a carbon-14 atom at position 4 in the molecule is due largely to the method developed by Turner at Harvard University. This method depends on the splitting of ring A in the steroid nucleus, the incorporation of a carbon-14 atom, and subsequent closure of the ring. This procedure can be applied to steroids containing a 3-keto, 4:5 double bond grouping in ring A. By this procedure the following isotopically labelled steroids are available —testosterone-4-C14 (and its propionate), progesterone-4-C14 and cholesterol-4-C14.

The synthesis of labelled estrogens is due to Levitz in New York. Estrogens contain a phenolic ring A and hence Turner's method to produce C4 compounds cannot be used with these steroids. The procedure now adopted is to open ring D by oxidation, incorporate carbon-14 from carbon-14 dioxide and finally close the ring. By this method it has been possible to synthesise estradiol-16-C14, estrone-16-C14 and estriol-16-C14.

The radioactive isotope of hydrogen commonly known as tritium (H_3) was used as a tracer as early as 1940, but it is only in relatively recent times that tritium-labelled compounds have become widely available. The increased use of this isotope for labelling can be attributed to three factors: (1) the price of tritium has fallen considerably over recent years; (2) the detection of the extremely weak beta radiations has become much more efficient (carbon-14 beta have an energy of 0.158 MeV, compared with tritium beta energy of 0.018 MeV); and (3) the labelling to compounds with tritium is much easier.

It has been found that if hydrogen atoms in a molecule are excited by suitable radiations, they are able to exchange with other hydrogen atoms present in a surrounding atmosphere of hydrogen gas. In other words, under suitable excitation conditions, exchange can be effected between molecular and atmospheric hydrogen atoms. This has led to the development by Wilzbach, in Chicago, of a "gas exposure" technique for preparing radioactive tritium molecules.

The compound to be labelled is exposed to tritium gas, which serves a double function. Beta particles from the tritium excite the molecules of the compound and promote exchange between molecular and atmospheric hydrogen. Because the atmospheric hydrogen consists largely of radioactive tritium, exchange will produce a labelled molecule. The labelled material usually contains small amounts of highly labelled impurities. Removal of these by-products requires efficient purification procedures, and this is generally the most costly and tedious part of the labelling technique. To date the only tritium-labelled steroid available is corticosterone, but it is expected that other steroids will shortly appear. (For further information on tritium and tritium labelling, see "Nucleonics," vol. 16, p. 63, March, 1958.)

Steroid metabolism studies have been carried out extensively with carbon-14 labelled compounds. Because of the relative ease of detection, it is possible to quickly determine the absorption, distribution and excretion pattern of the labelled material. This information can be readily obtained by the relatively simple procedure of determining the radioactivity in bile and urine samples and illustrates the advantages of using isotopes in such studies. For example, studies on steroid metabolism carried out by the author at the Sloan-Kettering Institute for Cancer Research in New York, under the auspices of a Pfeiffer Travelling Scholarship, indicated that 70 per cent. of an administered dose of 2 mg. of estradiol-16-C14 appeared in the urine within 24 hours of injection. Further studies with this labelled estradiol in patients with fistulas leading from their bile ducts indicated that a larger proportion of radioactivity was excreted by this route than through the urine. As fecal excretion was negligible, it was obvious that intestinal absorption of the biliary excreted hormone was taking place.

Steroid metabolism studies in the first instance usually have as their aim the determination of three characteristics for that particular steroid—namely, the rate of excretion, the route of excretion, and the metabolites so produced. Both route and rate can be quite readily determined as outlined above for estradiol.

The determination of the metabolites excreted usually requires the use of microtechniques such as paper chromatography. At the commencement of studies on estradiol metabolism, eight metabolites had been detected in the urine with isotopes or had been isolated from pregnancy urines when the normal body formation of estradiol is very high. In our studies extracts from hydrolysed urines containing estradiol metabolites were chromatographed on paper strips. Radioactive metabolites on these paper strips were readily detected, and from a comparison of Rf values and other tests, could be identified. However, in addition to metabolites previously detected four unidentified substances were found. It has been possible to date to identify two of these substances by comparing them with non-active compounds suspected as being urinary metabolites. Two of these unknowns have been identified as 2-methoxy-estriol and 16-beta hydroxy-estrone.

Summarising, it can be seen that the use of isotopes or "tagged" atoms has more or less revolutionised studies in the metabolism field, particularly in steroid hormone metabolism. This is due mainly to the fact that the radioactive atom can be so easily detected and estimated. In this short article it is hoped that some idea of the importance of isotopes in research has been emphasised, and it is hoped that radioactive substances will become more widely used in Australia in the future.

"RADIOACTIVE ISOTOPES"

By A. I. K. Lloyd
(Victorian College of Pharmacy)

In this paper I will try to predict how radioactive isotopes, substances entirely new to the profession of pharmacy, will affect it, in all its facets. For this purpose it will be sufficient to consider only the two main uses for isotopes, and these only in broad outline. I will not discuss any technical aspects of radioactivity as this is not necessary for the paper. I will mention the use of these substances for (1) research, and (2) medical diagnosis and therapy. Mention will also be made of some possible industrial uses of ionising radiations.

I feel that all must agree with me that isotopes will affect our profession to some extent. How much, I feel, will depend solely on how much responsibility the profession will take upon itself and this in turn will depend on the extent of preparation it will make to accept this responsibility, As with all other things new, the teaching departments of the profession will initially have to bear the greatest burden in preparing the profession for the responsibility. If they do this wholeheartedly and now, then pharmacy will have an important part to play in the handling and control of isotopes; if there is indecision and prevarication, then I feel that the profession will be left well behind in this new and important field.

What I now want to do is to review in the light of my own experience what I feel the profession should do in this regard, and give some of the reasons for my recommendations. I feel that I have been lucky enough to have had considerable experience that allows me to form these opinions—as while touring around the world last year I visited as many people as I could in Britain, the Continent, U.S.A., and Canada, who were working with or were interested in radioactive isotopes, particularly in their medical and pharmaceutical applications, to look at their work and get some of their ideas. Perhaps it would be interesting for me to briefly review some of the things I saw and heard, to give you some idea as to what is being done and thought about overseas.

To get as thorough basic grounding as possible in the theory and practice of isotope work, I attended a four weeks' school at the Isotope School, A.E.R.E., Harwell, in Britain. This course was of the highest standard, for post-graduates from all over the world, and designed to give a complete basic training in all aspects of handling isotopes. As this school is the most important in this field in the British Commonwealth, I made sure that I gleaned as much information from the principals there —Faires and Parkes—as I could. As I was particularly interested in pharmaceutical education in isotopes, I pestered these gentlemen for their ideas on teaching this subject. They gave me, I believe, a very balanced and complete idea of the various methods that can be employed, as well as some of the difficulties.

For further background information I visited such places as the Radiochemical Centre at Amersham—where all the large-scale separation of isotopes and the dispensing of them for all of Great Britain is done; the "Atom Institute" at Kjeller, in Norway—where there is the joint Dutch-Norwegian research and production atomic pile; the "Centre for Studying the Application of Nuclear Energy" at Moll, in Belgium, which is a similar institution—and also various other institutions.

I then turned my attention to the use of isotopes in hospital clinical practice. In this, I was most fortunate in being able to visit many large hospitals where isotopes are handled routinely for diagnostic and therapeutic investigations. At these places I was able to talk to the physicists and radiologists in charge, and these people were able to give me many ideas on current usage and techniques. Some of the places I visited in England were the Royal Marsden Hospital (the new name for the Royal Cancer Hospital), University College Hospital, the Medical Research Council's unit on isotope research at the Hammersmith Hospital, and many others. In U.S.A., the main places visited were the National Institutes of Health Clinic, the U.S. Naval Hospital at Bethesda, the University of Chicago Clinic.

At all these places I was able to get many ideas on the practical clinical handling of isotopes, and their dispensing. The people in charge of this at these institutions were all very able men, who gave me the benefit of their wide knowledge and experience. Their thoughts on the place or pharmacy in the use of isotopes were most illuminating and I will deal with what they had to say in more detail a little later on.

Having got the basic knowledge at Harwell, and then the practical application to this in visiting the various instututions actually handling them clinically, I next turned my attention to what the various professional bodies were doing about it. As yet, the only work being done is at the schools of pharmacy. I therefore visited as many of the teaching institutions as I could.

In England, I found that no college actually had a course in the subject yet. However, there was much post-graduate research proceeding, using the substances as tools, as is only to be expected. The students using them, however, had to go to other places (such as Harwell) to learn the techniques of using these substances.

Nevertheless, many of the colleges there are preparing courses in the subject, and on visiting such places as London University, Chelsea Polytechnic, Nottingham and Manchester Universities, I was able to gain much valuable information on the problems of commencing such courses, and to get an idea as to the way they were proceeding. The first part of the programme took place soon after I left England (i.e., January, 1958), this being a course for pharmacy teachers at the Brighton School of Pharmacy in the subject of radioactive isotopes. The Isotope School at Harwell was assisting at this course, and it was being designed so as to give those attending a very brief introduction to the subject, especially with emphasis on the teaching of the subject. (Attending this course were teachers of pharmacy from all over the British Isles.) There was a similar course being run by the Sir John Cass College in London, although this was of a much more general nature. With this grounding of the teachers, it would seem that many of the schools will be starting their own courses very soon.

In U.S.A. I was more fortunate, as here there are many colleges at present actively engaged in teaching the subject in all sorts of courses, to undergraduates and post-graduates. As there were so many of these I tried to visit at least the most important and discuss with the teachers involved the various aspects of them. They were only too glad to afford me every assistance and were of considerable help to me. The places I visited were the University of Saskatchewan, the University of Toronto, the Philadelphia College of Pharmacy and Science, the University of Purdue, the University of California.

The courses were all different and of varying standards. However, they were all adequate for what they set out to do. All the places I mentioned at least had a detailed course for post-graduates, while most also had some instruction for undergraduates as well. This undergraduate instruction varied from a few lectures only to a full course of lectures and practical work.

Finally, I turned to industrial pharmacy, so as to round out this investigation. Here there was obviously a vast area for study, as the applications in industry are enormous. Also I feel that it is important not to forget the requirements of industry when planning courses for pharmacy. Accordingly, I tried to find out all the applications that might be used, and to see what is to be done so as to ensure the role of pharmacists in this field.

Right through industry there are isotopes used, and as I can only spend a little time on it, I shall have to leave many important aspects out. The most extensive use, of course, is still the research investigations using the isotopes as tracers, and it will be particularly here that the fastest growth may be expected for some time. However, other uses such as for packaging control, sterilisation, electrostatic precipitation and countless other fields are also important.

In Britain, the pharmaceutical industry is still not using isotopes as much as perhaps they might. At present there is a research committee set up by the British Association of Pharmaceutical Manufacturers investigating the various uses available, particularly the use of isotopes as sources for ionising radiation for cold sterilisation. No doubt, the main part of the industry is waiting on this report, and will no doubt act on this when published. Nevertheless, some firms are at present using isotopes in various ways to a slight extent.

In U.S.A., as might be expected, there is more activity. The reasons for this I will enlarge on a little later. Here, cold sterilisation using ionising radiations has already been used by one firm (although not now employed for various reasons). However, the most apparent use is the commercial marketing by two firms—Abbott Laboratories and E. R. Squibb—of a large range of substances in many varied dose forms. And these seem to be quite successful ventures. (I should mention here that such commercial production and marketing is impossible in Britain and I believe in Australia, due to legal restrictions.) Nevertheless, it is quite obvious, seeing the many applications in industry, that the pharmaceutical industry will be taking more notice of these methods, and will be needing more people with a knowledge of radioactivity in general.

I will now give my impressions of what will be required within the profession concerning these substances, and how their increasing and more widespread use will affect the various branches of the profession.

Retail Pharmacy

I will consider the effects on the retail practice of the profession first.

First of all, I do not believe that pharmacists in retail practice will handle or dispense isotopes in any way. There are several reasons for this—

1. In common with Great Britain, there is legislation in Australia at the Commonwealth level, and also envisaged if not passed in each State, that all people handling isotopes must have a licence to do so. Also, at the moment, each separate isotope is sent direct to the licensee for his own use, there being no provision for sub-distribution. As this works well, even with fairly large volume traffic, it seems highly unlikely that the system will change. As is well known, these substances are extremely hazardous and careful control is essential. The present system allows this, making a further reason against change.

2. Even if legally possible, I feel that it would be uneconomic for any but the biggest pharmacies to handle them, as the equipment involved, and the storage requirements, make their handling very expensive. This would be especially so if any dispensing was to be done, although it would still be expensive enough if only ready-prepared dose forms were handled.

3. For reasons that I will mention when I come to talk about education, it would be unlikely that a pharmacist entering retail practice would have had sufficient practical training to allow him to handle them. He may have enough theoretical knowledge, but this would not be sufficient to commence dispensing them.

Nevertheless, I believe that pharmacists will have to have a thorough theoretical knowledge of the subject when entering retail pharmacy. This is for the following reasons:—

1. Isotopes, particularly those in the B.P., are now firmly established in the Materia Medica and are used routinely. What is more, their use is increasing and they will certainly become even more important than they are now. It has been the pharmacist's responsibility always to study and understand all about drugs in common use (particularly those in the B.P.), even if he seldom or never handles them. These substances can be no exception, being, as they are, commonly used, and monographed in the B.P.

2. The above, perhaps, is not a complete reason in itself. However, when considered with the following, it is obvious why there is the necessity to know about them. This extension of reason 1 is—

With the increasing use of isotopes and nuclear energy for power and industry in every conceivable way, there is a very great public health hazard likely to be involved. Also with the threat of nuclear warfare, radioactive fallout will continue to be a factor in our existence. The only method by which the dangers to the public can be minimised are (1) stringent controls; (2) a knowledgeable public who can take appropriate measures to avoid risks if they are exposed to them.

The part the retail pharmacist can play in this is in the education of the public. As can be seen every day in the newspapers, the public is quite aware that a danger does in fact exist, although individuals are mainly quite ignorant of the facts. So it will continue to be an important part of the retail pharmacist's responsibility to guide and educate the people that he comes into contact with, as it is already on more common matters of public health. For this reason the retail pharmacist will have to have basic theoretical knowledge of radioactivity and isotopes.

Hospital Pharmacy

Hospitals will be, by far, the largest users of isotopes —and it will be hospital pharmacists that I believe will be the section of the profession most engaged in their dispensing for clinical uses. This might not happen straight away, but the implications will certainly need to be investigated now and appropriate preparations made. The important thing is, however, that if preparations are not made now, and the hospital pharmacists cannot, in the near future, take this new responsibility, then they will certainly lose their opportunity for some considerable time. My reasons for saying this are due to my observations overseas.

What happened in Great Britain and U.S.A. was that in the early days of using isotopes, the only people qualified to handle them were a few hospital physicists and radiologists. Quite naturally then, these were the people who were responsible for all the handling and dispensing of them. At that time, when the possibility of the substances was not fully recognised, there was not very much work to be done with them.

Now, however, with the extensive use of isotopes for all sorts of diagnostic tests and therapy, this commitment has grown out of all proportion; until now some physicists and radiologists spend 50 per cent. or more of their time only in supervising the dispensing of isotopes. And many of them believe that this commitment will increase even further.

This has meant that much of their normal work has to be reduced or even completely stopped. Many of them would welcome some shifting of the load so that they could spend more time doing their other work. And so when I suggested that the pharmacist, provided he was suitably trained, could easily undertake the responsibility of dispensing at least the routine dose forms, many of them were immediately interested. On further discussion they all agreed that if such an arrangement was organised, the over-all control would still have to rest with them, and that they would always have to be available for advice and assistance. Also they would dispense the unusual or difficult isotopes when necessary. But for the routine dispensing of the common isotopes—Iodine, Phosphorus, Gold and some of the other common ones—the pharmacist could easily handle it. What is more, they could be handled quite easily in most hospital pharmacy departments, as with much of this isotope dispensing, there does not need to be very much equipment or space.

In U.S.A. particularly, some radiologists did not agree with me, believing that nothing would be achieved by such an arrangement, and that the control should be only in the hands of the radiologists or physicists. Perhaps in that country, that is so—but we must remember that in that country there is a much greater availability of such trained persons. In Australia, such persons are

much harder to find, and so it seems that if suitably trained pharmacists were available, the isotope work would be much more easily carried out in hospital pharmacy departments—particularly in our country hospitals. I might mention in passing that although some Americans did not agree with me, it was most interesting to see at the University of Chicago Clinic, a hospital pharmacy department that was already dispensing isotopes in the manner I have described, and had been doing so for some few years. So, although I did meet people who did not agree with me, in the same country I found at least one hospital pharmacy department that was responsible for all isotope dispensing.

After all, isotopes essentially are only another form of drug, and it should be that the pharmacy department should handle these as well as all the other drugs in a hospital. However, hospital pharmacists must be ready to accept the responsibility as soon as it becomes necessary, by ensuring that there are pharmacists available who are trained to handle them. Otherwise pharmacy will lose what is rightfully hers—the control of all drugs and substances used in medicine—with only a distant hope of ever regaining them.

Academic Pharmacy

I have tried to show there is some urgency regarding the introduction of suitable courses in isotope technique and handling into our pharmacy courses. However, the introduction of such a course is not as simple as it may seem. Some of the factors that must be considered are as follows—

1. There is a need for a broad basic course on isotopes for all pharmacists, especially those entering into the retail branch of the profession, for the reasons given before.

However, there is also the need for a very much more advanced course, which must include a good deal of practical instruction, for persons who are desiring to enter into the fields of research, industry, or hospital pharmacy.

2. When considering the introduction of practical instruction, the high capital and maintenance cost of suitable apparatus, especially that of electronic nature, must be an important consideration. No matter how well endowed, it seems unlikely that any institution would be able to afford apparatus and instrumentation for more than a very few students at a time. In fact, it would seem likely that such installations would have to be used for any research programme as well as instruction, making it even more difficult for large numbers of students to be taught.

3. As this subject is one so new to all sciences, including pharmacy, a great deal of basic knowledge must be learned to ensure complete understanding. This means that the time involved in teaching this is long, especially if a detailed course is to be considered. For a basic course—the kind that would be given to all students—all the requisite information could no doubt be included in existing lectures, without too much imposition.

However, for a detailed course, this would not be possible. To give some idea of the time involved, I have calculated the time taken at Harwell, and at the Philadelphia College of Pharmacy and Science, to put over one of their courses. This is—

Harwell (Four weeks' full time)

Lectures—30 of 1½ hours, 45 hours.
Practical—17 of 5 hours, 85 hours.
Films—2.
Excursions—3.

Philadelphia College (Part time)

Lectures—21 of 1 hour, 21 hours.
Practical—17 of 3 hours, 51 hours.
Films—17.
Excursions—1.

There are several things to note about these courses. Both were for post-graduates and therefore a good deal of preliminary knowledge was essential. Both were fairly general courses, and so if they were to be applied to a more specialised course for pharmacy, they could no doubt be shortened a little. In both courses, by far and greatest emphasis is placed on practical training: and it is obvious that any similar course for pharmacy must have similar emphasis.

As the time involved in teaching this detailed course is so long, and needs so much practical work, the only way such a course can be incorporated into a pharmacy curriculum is to make it the subject of a special post-graduate or final year elective course. It is a specialised course, interesting only a few students each year, and as such is admirably suited to such a treatment. It seems to me that such specialisation must come in this subject, and other specialised topics, quite soon, if the requirements of the profession are to be met in all its applications; and the provision of electives in such topics seems to be the only possible solution.

It is not my intention in such a general talk as this to suggest specific recommendations as to the organisation of such a course. No doubt the design of a course has been exercising the minds of our educators already, and must always be affected by the conditions within the various teaching institutions themselves. I intend, however, at a later date to discuss the organisation of such a course in more detail.

Whatever happens, however, I want to make a plea that the problems of providing education in this field are met and solved soon, so that future pharmacists will be able to accept responsibility as soon as it may be required, no matter in which branch of the profession they may have chosen to practise.

Pharmaceutical Industry

In industry the way is not so clear. I have mentioned only a few of the many ways in which isotopes may be employed and no doubt there will be many new applications found in the future. However, they are all completely subject to considerations of economics, and so I can only leave the industry to work this out itself. If I can mention one field that seems to be particularly promising, I would commend the process of cold sterilisation using ionising radiations to your attention, as one which has great possibilities, particularly to the pharmaceutical industry.

One word about the commercial marketing of isotopes, in the manner that is carried out in the U.S.A.—I do not believe such a market can exist in Australia. For one thing it will be impossible legally to do so, for the reasons I have mentioned before. The other is that it would no doubt be most uneconomical, unless the use of the substances increased out of all proportion. Even in the U.S.A., with the huge market potential within that country, I believe the marketing of the isotopes is difficult from an economical viewpoint. For these and other reasons, it would seem that the distribution of isotopes in Australia will continue to be the function of a Government agency, at least for a good many years.

Conclusion

The profession of pharmacy has a problem and a challenge, with the increasing use and importance of isotopes. If it is to accept its rightful responsibility in handling these substances, it must prepare immediately to train future pharmacists so that they will have the knowledge and background to be fit and proper people to do so. We must not forget that all the many branches of the profession will have some need for the knowledge.

For the moment, then, the most important task lies with our teachers, who must produce adequately-trained pharmacists in this field. But the rest of the profession cannot leave it entirely to them. They will need to know exactly the requirements of training needed for the various parts of the profession, and thus exactly what training must be provided. So the practitioners of pharmacy, no matter in what field they are, must start to give earnest consideration to this and the many other questions involved in this topic. Only in this way can the profession keep pace with developments of science, and keep its present place of importance in the brotherhood of the professions.

THE BACTERICIDAL EFFECT OF SOME OPHTH ALMIC VEHICLES:

A PRELIMINARY STUDY

By R. A. Anderson and B. H. Stock

A review of the literature relating to the anti-bacterial activity of ophthalmic vehicles reveals many inconsistencies. Even after the exclusion of those papers which have investigated bacteriostatic as distinct from bactericidal activities, many contradictions remain.

Some of these may be explained by variation in the techniques used; the techniques have differed in—

(a) The strains of organisms used and the degree of contamination;

(b) The concentrations of chemical agent in the vehicle and the time of contact with the organism;

(c) The volume of contaminated solution taken for testing; and

(d) The effectiveness with which the culture medium has neutralised the activity of the amount of chemical substance added in the form of the contaminated solution.

In many cases full details are not included in the paper.

The volume of contaminated vehicle tested varies from a loopful (McPherson and Wood, 1949) to 1 ml. (Frith and Wright, 1955). When the smaller volumes are tested the chance of picking up any unkilled bacteria is reduced, so this is clearly not so desirable as testing a larger volume. However, when the larger volumes of vehicle are added to the culture media, it is essential to ensure that the chemical agent taken over in the vehicle is neutralised and that an apparently negative result is not due to inhibition of growth of unkilled organisms. In some cases this possibility seems to have been ignored.

On the other hand, Riegleman et al. (1955) stressed this shortcoming and claimed to have overcome it by injecting solutions into the cornea of rabbits. They found that some solutions which had given negative *in vitro* results produced corneal ulceration and they were able to isolate the original contaminant from the ulcerated tissue. This method, however, allows only relatively small volumes to be tested at one time, and these workers used only 0.1 ml. of vehicle for each eye.

As a preliminary to a more detailed investigation it was decided to apply a technique reasonably free of the above objections to—

(a) Some of the vehicles which have been the subject of conflicting reports, and

(b) Two substances, chlorhexidine acetate ("Hibitane" I.C.I.) and dequalinium chloride ("Dequadin," A. & H.) which have been made available recently and which might be expected to offer possibilities in this field.

A full range of organisms at different levels of contamination, and the effect of temperature, of pH and of common ophthalmic medicaments, have not been tested at the present time.

Experimental

A pure 18-24-hour broth culture of the organism under test was diluted with nine volumes of sterile water, and one drop (0.04 ml.) of this dilution was added to 20 ml. of each of the following ophthalmic vehicles—

Vehicle 1—Cetrimide, 1 in 20,000 in distilled water.

Vehicle 2—Benzalkonium chloride, 1 in 20,000 in distilled water.

Vehicle 3—Chlorhexidine acetate, 1 in 10,000 in distilled water.

Vehicle 4—Dequalinium chloride, 1 in 2,000 in distilled water.

Vehicle 5—Phenylmercuric nitrate, 1 in 10,000 in distilled water.

Vehicle 6—β-phenylethyl alcohol, 0.6% in distilled water.

Vehicle 7—Chlorbutol 0.5% in sterile water.

Vehicles 1 to 6 were sterilised by heating in an autoclave at 115 deg. C. for 30 minutes. Vehicle 7 was prepared by adding the chlorbutol crystals to the sterile water and shaking until dissolved; alternatively the required amount of a solution of chlorbutol in propylene glycol was dissolved in the sterile water by shaking (Anderson and Stock, 1957).

The contaminant was distributed throughout the test solutions by shaking, and one ml. of each was immediately (within two minutes) removed to appropriate culture media. Further one ml. samples of the test solutions were removed after 15, 30 and 60 minutes, and added to appropriate culture media.

Test solutions 1, 2, 3 and 4 (containing cetrimide, benzalkonium, chlorhexidine and dequalinium respectively) were added to 20 ml. of egg yolk medium; the test solution 5 (containing mercury) was added to 20 ml. of thioglycollate medium; the test solution 6 (containing phenylethyl alcohol) was added to 20 ml. of nutrient broth; and test solution 7 (containing chlorbutol) was added to 10 ml. of nutrient broth. The formulas of these media and some details regarding the egg yolk medium are set out in the appendix to this paper.

The culture media were incubated for up to 10 days (7-10 days was found to be necessary for the mercury-thioglycollate media) at 37 deg. C., when Micrococcus pyogenes var. aureus was the contaminant and at 32 deg. C., when Pseudomonas aeruginosa was the contaminant.

The results of many experiments are summarised in the table.

Discussion

Obviously none of the vehicles tested is entirely satisfactory, even though many of those which have been suggested by previous investigators have been included The conflict with the results of these workers is thought to be due principally to—

(a) The larger volume taken for culture, and

(b) More effective neutralisation.

Table

The Effect of Various Chemicals on Micrococcus pyogenes and Pseudomonas aeruginosa

Vehicle	Micrococcus pyogenes var. aureus B 313 after				Pseudomonas aeruginosa W.C.T.C. 6750 (c) after			
	2 mins.	15 mins.	30 mins.	60 mins.	2 mins.	15 mins.	30 mins.	60 mins.
1. Cetrimide 1 in 20,000	+ve.	+ve.	+ve.	±ve.	+ve.	+ve.	+ve.	+ve.
2. Benzalkonium Chloride 1 in 20,000	+ve.	±ve.	±ve.	±ve.	+ve.	+ve.	+ve.	+ve.
3. Chlorhexidine Acetate 1 in 10,000	+ve.	+ve.	±ve.	±ve.	+ve.	±ve.	±ve.	±ve.
4. Dequalinium Chloride 1 in 2,000	+ve.	+ve.	+ve.	±ve.	+ve.	±ve.	±ve.	±ve.
5. Phenylmercuric Nitrate 1 in 10,000	+ve.	+ve.	+ve.	+ve.	+ve.	+ve.	+ve.	+ve.
6. Phenylethyl Alcohol 0.6%	+ve.	+ve.	+ve.	±ve.	+ve.	+ve.	+ve.	+ve.
7. Chlorbutol 0.5%	+ve.	+ve.	+ve.	+ve.	+ve.	±ve.	±ve.	±ve.

(a) + ve. indicates growth of organisms on culture.
(b) ± ve. indicates no growth of organisms on culture.
(c) Two other distinct strains of Pseudomonas aeruginosa were also used with the same results.

THE FEDERATED PHARMACEUTICAL SERVICE GUILD OF AUSTRALIA

PFEIFFER TRAVELLING SCHOLARSHIP 1959

The Federal Council of the Guild has pleasure in announcing the Gustavus and Louise Pfeiffer Research Foundation travelling scholarship, 1959.
The scholarship is valued at $3,375 (about £A1,500).

OBJECT OF SCHOLARSHIP

The object of the scholarship is to train young Australian pharmacists for future positions of leadership within the profession by extending to them at a young age the opportunities of overseas experience and study.

CONDITIONS OF THE PFEIFFER SCHOLARSHIP

1. The applicant must:—
   (i) Be a graduate of an Australian Pharmacy Department and a registered Pharmaceutical Chemist.
   (ii) Be preferably not more than 30 years of age on 31st December, 1959.
   (iii) Submit to the Federal Council an outline of a proposed project, supported by evidence of the applicant's ability to carry it out.
   (iv) Submit the names of two suitable referees.

2. The project submitted must impinge upon one or more of the following categories:—
   (i) Teaching.
   (ii) Advanced Studies.
   (iii) Higher Degrees.
   (iv) Research.
   (v) A study of the methods and conditions of pharmaceutical practice in any of its aspects, such as Retail, Wholesale, Hospital, Manufacturing, National Health; and may include such aspects of practice as organisation, merchandising, display and advertising.

   (It would be necessary in some instances for the successful applicant to visit different centres in the United States.)

3. The successful applicant will be required:—
   (i) To reside in the United States of America for not less than ten months.
   (ii) To submit to the Federal Council periodic reports on his work at intervals to be agreed upon, and a detailed report after the expiration of the scholarship.
   (iii) By arrangement with the Federal Council, to deliver, if so required, a series of lectures or addresses on his work in America in two or more States of the Commonwealth.
   (iv) To give an undertaking that he will return to Australia and remain in active association with Pharmacy for at least two years after expiry of the scholarship.

4. Applications should be addressed to the Federal Secretary, The Federated Pharmaceutical Service Guild of Australia, 18-22 St. Francis Street, Melbourne, Victoria.

5. **The latest date for lodgment of applications for the 1959 scholarship will be 30th November, 1958.**

   Notwithstanding the foregoing requirements, the Federal Council may in its discretion consider applicants whose qualifications are not altogether as outlined above.

   The award may be terminated at any time by the Federal Council, if there is a good reason.

   The Federal Council may vary the conditions of the award, if it so desires, from time to time.

Cetrimide and Benzalkonium

The procedure described above is very similar to that used by Frith & Wright (1955) and yet the results obtained with cetrimide are markedly different. It is possible that ineffective neutralisation is the reason for their negative cultures, although they did use a medium which had previously been found to be effective (Quisno et al, 1946). However, it should be pointed out that different strains of contaminating organisms were used and this may also be a factor.

The slight superiority of benzalkonium chloride over cetrimide against the Micrococcus pyogenes is supported by the results published by Allport (1952) even though we have used the purer cetrimide which is now available.

Chlorbutol

Our chlorbutol solutions were not autoclaved and this might explain why our results for this compound are slightly better than those obtained by Frith & Wright. Klein et al (1954) have shown that heated chlorbutol solutions are less effective than those which have not been subjected to heat.

Solutions of chlorbutol made by both of the methods outlined above (that is by shaking the solid with sterile water for some hours and also by prior solution of the chlorbutol in propylene glycol) were included in many of the series, and the propylene glycol seemed not to interfere with the action of the chlorbutol. (When propylene glycol was replaced by magrogol 400, however, there was some evidence of inactivation.)

Vehicles containing chlorbutol and phenylethyl are conveniently prepared by a similar method, and we have obtained some evidence which suggests that this combination is more effective than either compound alone.

Chlorbutol was also used in some early experiments in which the same technique was used, except that the contamination was ten times heavier, and under these conditions it gave results comparable to those shown in the table. It would seem that the effectiveness of chlorbutol against Ps. aeruginosa is not much affected by such changes in the degree of contamination.

Phenylethyl Alcohol

Klein, et al, found that 0.6% phenylethyl alcohol killed much more rapidly than the more usual 0.5% solution, and so the higher concentration was used in this study. It was not effective against Ps. aeruginosa.

Phenylmercuric nitrate

Phenylmercuric nitrate was not effective, although growth in the thioglycollate medium was quite slow. Occasionally tubes were still clear after seven days, but showed definite growth after 10 days. More than 1 in 10,000 of phenylmercuric nitrate introduces incompatibilities with chlorides and so higher concentrations were not considered.

Chlorhexidine and Dequalinium

Both these agents show more promise than the more commonly used substances. Chlorhexidine acetate was also used in some early experiments in which the same technique was used, except that the contamination was ten times heavier; under these conditions it was quite ineffective. Under the somewhat more realistic degree of contamination used in the later experiments which are recorded in this paper, it is much more satisfactory. It therefore differs from chlorbutol, which (as stated above), is not much affected by changes in the degree of contamination.

General

For every vehicle tested and at all periods of contact, at least some positive cultures were obtained. This was at first thought to be due to the slightly different room temperatures (from 15 to 21 deg. C.) at which the test solutions were stored. Whilst this may explain the results for some vehicles, it is also possible that the infrequent positives after 60 minutes exposure in, for example, chlorhexidine and dequalinium may be due to the presence of a few survivors which are always present, but which often are not taken over in the 1 ml. transferred to the culture medium. This reasoning is supported by the results of an occasional series in which a sample taken after 30 minutes showed a negative result even though the 1 ml. sample taken from the same tube after 60 minutes of contact gave a positive culture. The possibility of accidental contamination must not be overlooked, but in every case this positive culture was plated out and the original contaminant isolated.

If this reasoning is correct, the next best step might be to trace the reduction in bacterial number against the period of contact with the test solutions. This determination of the rate of kill should give a clearer picture of what is going on in the tubes and might help clear up this anomalous situation.

Summary

1. Aqueous solutions of benzalkonium chloride, cetrimide, chlorhexidine acetate, dequalinium chloride, phenylmercuric nitrate, β-phenylethyl alcohol and chlorbutol have been investigated for their effectiveness in killing two important contaminants of ophthalmic vehicles.

2. None of these agents was completely satisfactory, and results were obtained which disagree with previously published work.

3. It is proposed that the technique should be modified so that the rate of kill of these contaminants in the ophthalmic vehicles under test can be determined.

We are indebted to Imperial Chemical Industries Ltd. for a supply of "Hibitane" and to Allen & Hanburys Ltd. for the "Dequadin" used in this study.

Appendix

The formula for the Nutrient Broth is as follows—

Peptone (P.D. & Co.), 10 g.; "Bonox," of commerce, 5 g.; Sodium Chloride, 5 g.; Water to 1 litre; pH 7.4.

The formula for Thioglycollate Medium is as follows—

Sodium Thioglycollate, 1 g.; Nutrient Broth to 1 litre; pH 7.2.

The formula for the Egg Yolk Medium is as follows—

Egg Yolk, 50 ml.; Nutrient Broth to 1 litre.

Method

The egg yolk was separated from the "white" and triturated in a glass mortar. Nutrient Broth was added and the whole made up to one litre in an oversize container and vigorously shaken. The suspension was transferred to 25 ml. McCartney bottles and sterilised by heating in an autoclave at 115 deg. C. for 30 minutes. When nearly cool (about 60 deg. C.) the bottles were vigorously shaken to form a uniform suspension.

The medium was originally investigated as an alternative to the clear filtered egg medium proposed by Davies (et al 1954), for neutralisation of chlorhexidine. Quite often it was possible to make a direct positive reading for Ps. aeruginosa because of the obvious pigment formation. In all other cases it was necessary to subculture; we chose to plate out the culture on to agar so that the morphological characterisics of the original organisms could be checked.

It was found that the egg yolk medium also effectively neutralised the quinaldium and quaternary ammonium compounds, so this one neutralising medium was used for test solutions 1, 2, 3 and 4.

This work was carried out in laboratories conducted jointly by The Pharmaceutical Society of South Australia and the University of Adelaide.

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A STUDY OF THE STABILITY OF ATROPINE EYE DROPS—A.P.F.

By Janet E. G. George
(Department of Pharmacy: University of Sydney)

The purpose of this work has been to determine the stability of atropine sulphate in a buffer at pH 6.5 on heating at 100 deg. C. for 30 minutes—these conditions conform to the A.P.F. specifications for heating Eye Drops of Atropine Sulphate.

In aqueous solution atropine is hydrolysed to form tropic acid and tropine. It has been known for some time that the hydrolysis is accelerated by alkali and by increase in temperature, but until recently no figures were available for the quantitative effects of these factors on the decomposition.

Amongst the earlier work Exler[1] noted that at pH 5, a solution of atropine showed hydrolysis of 20 per cent. after heating at 80 deg. C. for five hours. Schou and Bjerregaard[2] showed that at pH 6, atropine was stable to sterilisation at 120 deg. C. for 20 minutes, but at a higher pH, rapid hydrolysis occurred. Klyachkina and co-workers[3] found that after heating an 0.05 per cent. solution for one hour at 80 deg. C., 30 per cent. decomposition occurred. The methods used here were biological assays, and may have incurred an error in results.

Work by Higuchi and others[4] on the hydrolysis of another thermolabile substance, procaine, prompted research by Zvirblis, Socholitsky and Kondritzer[5,6] on the kinetics of the hydrolysis of atropine. They found that above pH 4.5 the hydrolysis is catalysed by hydroxyl ion; below pH 3 hydrogen ion is the catalyst; a rise in temperature accelerates the reaction. To obtain maximum stability with rise in temperature, a decrease in pH is necessary. For instance, maximum stability is achieved at 20 deg. C. with a pH of 3.84, at 100 deg. C., a pH of 3.24 is necessary.

These workers determined the stability of atropine over a range of temperatures up to 100 deg. C., and at various pH values, and formulae were given for calculation of stability. However, figures are not available for its stability at 100 deg. C. at a pH higher than 4.5.

In the B.P. 1958 the sterilisation method specified for Injection of Atropine Sulphate is to autoclave at 115 deg. C. for 30 minutes. This has been altered probably as a result of these investigations by Zvirblis and his co-workers.

Method of Analysis

The method of analysis depends on the absorption of U.V. light by atropine at its absorption peaks of 262.25 and 256.25 mμ. The spectrum of tropic acid is almost identical to that of atropine and consequently, to avoid interference, they must be separated for assay.

Firstly, a series of standard solutions of atropine sulphate in 0.1 N sulphuric acid were prepared, and it was found that the absorbance varies directly as concentration. This graph was then used as a standard for the determination of concentration.

A solution of Atropine Sulphate 1 per cent. in Ophthalmic Phosphate Buffer (Cetrimide) of the A.P.F. was prepared, and distributed in clinbritic bottles to avoid solvent loss during heating. These were heated in a constant temperature bath at 100 deg. C. for 30 minutes. A sample of the same solution was kept at room temperature during this period as a control, and for this similar extraction process was followed. Ten ml. portions of the solutions, i.e., 100 mg. of Atropine Sulphate, were then extracted. To separate residual atropine from the decomposition product, tropic acid, the solution was made alkaline with ammonium hydroxide; this precipitated the atropine base, which was then extracted with 3 x 6 ml. portions of purified chloroform. The chloroform extract was evaporated under reduced pressure, and the atropine dissolved in 62.5 ml. of 0.1 N H_2SO_4 to give a theoretical concentration of 0.16 per cent.

The concentration was then determined on a Hilger U.V. spectrophotometer, readings being taken at the absorption peaks of 256.25 and 262.25 mμ.

Results

The results obtained are shown in Table I.

Table I

Analysis of a 1 per cent. Solution of Atropine Sulphate.

Before Heating	After Heating
1.012	1.04
1.03	1.04
1.00	1.025
1.00	1.018
1.01	1.05
0.983	1.01
Mean: 1.006	1.035

Discussion

These results indicate that on heating there is very little alteration in the concentration of atropine sulphate. Although there is a slight increase in the heated solutions, this could be attributed to a small amount of tropic acid which is being extracted by the chloroform; it may also be caused by experimental errors, which here are of the order of 1-2 per cent.

We feel that these results show that the degree of hydrolysis on heating at 100 deg. C. for 30 minutes at a pH of 6.5 is very low, and therefore, that the method of preparation of Atropine Eye Drops, A.P.F., does not incur decomposition of the atropine sulphate and consequent reduced activity of the preparation to any appreciable extent.

Acknowledgments

I wish to thank Dr. S. E. Wright for suggesting this topic and for his helpful advice.

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THE USE OF THE SPECTROPHOTOMETER IN PHARMACEUTICAL ANALYSIS

By E. B. Pollard, Ph.C.

Absorption Spectrophotometry is an analytical method which has been developed over many years, but has come into general use in the last 15 years. It is a physical method of analysis based upon the capacity of certain substances to absorb certain amounts of light at certain wave lengths.

The wave lengths involved can range from beyond the Ultra Violet range 125 to 185 m/u (millimicrons), through the Ultra Violet region 185-400 m/u, then the Visible region 400-800 m/u, then the Infra Red region above 1,000 m/u.

We are concerned here only with the Ultra Violet and the Visible ranges, although Infra Red is being increasingly used. Light falling on a medium may be reflected, absorbed, or transmitted. The effect of reflection is minimised by the use of blanks, and the light transmitted is measured—the remainder being absorbed. The absorbed light is presented by the instrument as a percentage of the light originally present.

The essential feature of the instrument, then, is the selection of a suitable beam of light of known wave length, the passing of this through a 1 centimetre fused

silica cell containing a solution of the drug to be evaluated, and the measurement by photo-electric cells and a suitable electronic magnifying system.

Official Requirements

Before discussing actual results, it is well to look into the extent to which this method has become official, i.e., to what extent its use is obligatory when dealing with substances with official standards. The method is used as an identity test with some substances, and an assay method for others.

The following table shows the number of substances in the B.P. 53 and the B.P. 58, for which the method is prescribed.

	B.P. 1953	B.P. 1958
Visible Range Identities	Nil	9
Visible Range Assays	1	8
Ultra Violet Range Identities	12	59
Ultra Violet Range Assays	Nil	21
Total	13	97

Not every laboratory, of course, deals with the whole range of B.P. drugs and products, but this is sufficient demonstration of the greatly increasing use of this method.

Description of the Instrument

The particular instrument in use in our (Burroughs Wellcome) Laboratory is the Hilger Uvispek Spectrophotometer, Type H700.304.

This was purchased in 1955 at a cost of just over £1,200 (Aust.). This is an all mains type of instrument, no batteries being used.

It consists essentially of a light source, of one of two kinds, i.e., a normal electric bulb for the visible and a Hydrogen Discharge Lamp for the Ultra Violet. Light from one of these sources is passed through a slit and, after reflection, falls upon a large quartz prism which splits the light into the spectrum. This prism can be revolved on its axis and is calibrated with a very fine scale on which are graduated the range of wave lengths needed. The particular beam of light needed passes through a slit and by means of reflecting mirrors is rendered parallel and then passes into a chamber where the sample is placed.

The sample is contained in a 1 cm. Fused Silica Cell. A blank of water or other solvent (sometimes containing interfering substances in the same ratio as the sample) is first used and the instrument set to zero, the sample is then inserted in the beam and the light falling on the photo-electric cell is recorded and the result amplified electronically and read from a very fine scale which presents the results as a percentage of light absorbed by the sample.

The instrument may also be used with an attachment for flame photometry (used mainly in the estimation of Sodium, Potassium and other metals) and may also be used as a Fluorimeter (for which another attachment is necessary).

Use of the Instrument in Our Laboratory

In our laboratory the spectrophotometer has found a wide application. In all we use it for the following number of routine estimations of products, apart from identification and assays of drug supplies as previously mentioned as being within the B.P. Not all of these, of course, are handled in this particular laboratory.

	Visible Range	Ultra Violet Range
Tablets	3	21
Injections	10	10
Syrups	0	1
	13	32

Total, 45 operations in routine assay of finished products.

In the Ultra Violet range the actual light absorption of the solution is measured. For instance, Adrenaline Injection can be estimated by direct absorption in the Ultra Violet, providing that no substance in the injection, (e.g., chlorocresol) interferes with the absorption. If chlorocresol is present, then an alternative method is used, a colour is developed by means of Sodium Tungstate and Caustic Soda and this is read in the Visible range before the colour fades.

Let us take these two methods. First let us consider Assays we employ using the Visible range.

Injections and Solutions

Visible using a Standard Drug

Substance	Method	Wave Length of Comparison m/u
Adrenaline Inj. Inj. Multidose Adrenaline Solution	Colours with Na Tungstate and NaOH compared after 5 minutes	700
"Aerocortin" for Hydrocortisone	Colours with Tetramethylammonium hydroxide and Triphenyltetrazolium Chloride compared after 20 minutes in subdued light	485
"Lanoxin" Inj. "Solution of Digoxin" "Lanoxin" Oral Sol. of Digoxin "Lanoxin" Paediatric Elixir	Colours with 2% H_2SO_4 in glacial acetic + .005% $FeCl_3$ compared after 90 minutes	590
Migramine Inj. for Ergotamine Tartrate	Colours with para-dimethylamino benzaldehyde in 65% H_2SO_4 compared after 5 minutes	550 Standard used is Ergometrine Maleate (1.488 used as conversion factor)
"Neo-Epinine" Spray Sols. Nos. 1 & 2. Isoprenaline Sulphate compound spray sol. for Isoprenaline Sulphate	Colours with Na Tungstate and NaOH compared after 5 minutes	700

Tablets

Visible Using a Standard Drug

Substance	Method	Wave Length of Comparison m/u
"Lanoxin" Digoxin	Colours with 2% H_2SO_4 in glacial acetic + .05% $FeCl_3$ compared after 90 minutes	590
"Neo-Epinine" Isoprenaline SO_4	Colours with Na Tungstate and NaOH compared after 5 minutes	700
Stilboestrol	Extraction then colours with Na Molybdophosphotungstate compare after 1 hour	780

It will be seen that all these compare colour developed after addition of a reagent to the solution of drug and allowing time for the colour to develop

Secondly we have Assays we employ using the Ultra Violet range.

Injections—Ultra Violet

Name	Dilution	Wave Length m/u	1% E 1 cm.
Adrenaline Inj. (not multidose chlorocresol interference)	1 in 30	280	150.1
Adrenaline Inhalant	1 in 300	280	150.1
"Aerodrin" Intranasal Solution for Methoxamine HCl.	1 in 100 buffer with KH_2PO_4	290	135.3
Ergometrine Maleate .05% .0125%	6 in 100 24 in 100	312	183
"Lethidrone" Inj. of Nalorphine Hydroch. (not multidose, orthocresol interference)	1 in 100	285	38.69
"Methedrine" Inj. of Methylamphetamine HCl.	5 in 200 containing 20 ml. N/10 HCl.	257.3	9.72
"Marzine" Inj. of Cyclizine Lactate	1 in 2,000 with N/10 HCl. as solvent	224	326.5
Inj. of Pethidine HCl.	1 in 100	257.5	7.38
Physeptone Inj of Methadone HCl.	3 in 100	293	15.49
"Tubarine" Inj. of Tubocurarine Chloride	1 in 200	280	105.0

Tablets—Ultra Violet

"Actidil" Triprolidine HCl.	1 prod. in 200 ml.	230	446.0
Phenacetin in "Empirin" Compound "Codral" Phenacetin Phenacetin Compound Compound Tablets of Codeine	Equivalent of .001% solution in 96% alcohol	250 **Note.**—An allowance is made .06 in .940 for the absorbence of the aspirin and caffeine present. This has to be altered if these are found to vary greatly from normal Label Strength.	880.0
Caffeine in "Empirin" Compound "Codral"	Equivalent of .001% sol. in 96% alcohol aspirin and phenacetin removed	272 **Note.**—An allowance is made .002 in .446 for the absorbance of the codeine if present.	444.0
Ergometrine Maleate	6 prods. in 100 ml. 1% Tartaric Acid solution	312	183
Ethisterone	Equivalent of .001% solution in absolute alcohol	240	500.0 changed from 480 in B.P.53
Methyltestosterone	Equivalent of .001% solution in absolute alcohol	240	550
"Marzine" Cyclizine HCl.	.002% in N/10 HCl.	225	384.5
"Maredox" Cyclizine HCl. Pyridoxine HCl.	Equivalent of 1 prod in 5,000 ml. N/10 HCl.	Cyclizine HCl. 225 Pyridoxine 225 291	384.5 131.0 423.0

Note.—Measure at 225 and 291 m/u. At 291 Cyclizine has no absorbance.

Riboflavine	2 products in 1,000 ml.	444	320
Quinine Bisulphate	.06 G./1,000 ml.	346	99.04
Quinidine Sulphate	2 prods. in 10,000 ml.	346	138.8
Quinine, Ergot and Strychnine for Quinine Sulphate	3 prods in 10,000 ml.	346	138.8
"Saxin" Saccharin	.45 G./5,000 ml.	269	87.5
"Tricoloid" Tricyclamol HCl.	5 prods. in 200 ml.	257	5.55

Syrups—Ultra Violet

"Actidil" Elixir Triprolidine HCl.	After extraction Triprolodone HCl. dilute 1 in 25	230	446.0

These are all directly read from the solution of drug, making allowance for bases present in tablets or other drug forms which may be present.

An interesting side activity in which this instrument was used was in the evaluation of the effectiveness of sun screening agents in the range of U.V. light, i.e., 290 m/u to 320 m/u, which causes sunburn. The absorption curves of these substances gave a very clear indication of their effectiveness.

Another occasion when the instrument proved useful in an unexpected way was when we drew a sample of alcohol 96% for use in the laboratory and found it had an undue absorption in the U.V. This proved to be material dissolved from a new pump tube just put into use.

Finally

Enough has been said to demonstrate the great usefulness of this instrument in Pharmaceutical Analytical Control. We regard this as one of the best investments we have made. It has thoroughly justified its purchase and in the hands of experienced analysts fresh applications can be worked out as new drugs come along. On the other hand routine estimations can be carried out by technicians or first-year cadet chemists. No trouble has been experienced in its use over three years, except that on two occasions the scale became misplaced in relation to the prism and gave erratic results.

In its official applications, and in practical use, it has become a necessity in any up-to-date laboratory concerned with pharmaceutical analysis.

I wish to thank the directors of Burroughs Wellcome & Co. (Aust.) Ltd. for permission to publish this paper.

KEROSENE POISONING: EMESIS, GASTRIC LAVAGE, OR NEITHER?

By S. A. Downie, Chief Pharmacist, Adelaide Children's Hospital, S.A.

Wall charts of poisons and their antidotes are sometimes distributed by pharmacists to housewives.

Under the heading of kerosene poisoning the parent is often advised to give an emetic. Some reference books, including Volume I of The Extra Pharmacopoeia (Martindale) 1958, also suggest this procedure.

I contend that this advice should be withdrawn from wall charts and amended forthwith in reference books.

Kerosene is a gastric irritant, which, although a very common cause of poisoning in Australia in children under three, is seldom fatal.

The best advice a pharmacist can offer to a parent is the immediate administration of a glass of milk—provided the child isn't obviously drowsy and shocked. In the latter instances, the wise pharmacist suggests immediate removal to hospital.

Almost invariably emesis leads to aspiration of kerosene, with subsequent pneumonitis and broncho-pneumonia. Now not all kerosene swallowers develop these sequalae.

In fact, of the 97 cases admitted to the Adelaide Children's Hospital in 1957, eleven were obviously ill when first seen.

Of the remaining 86, about 50 showed no obvious discomfort while in hospital, and the remainder (i.e., about one-third of the kerosene swallowers admitted), although well on admission, became drowsy, or feverish, or developed rapid respiration.

Prior to June, 1954, we routinely washed out the stomach of all kerosene swallowers, then admitted them and instituted prophylactic sulphadimidine therapy combined, if necessary, with intramuscular penicillin.

Since then we no longer wash out, and we only admit those children who are obviously ill; otherwise we closely observe the temperature, and the pulse and the respiration rates every hour for three hours. Whether these latter figures are normal or slightly abnormal we suggest the child should then be put to bed for 24 hours and then be re-examined either by the hospital or by the family doctor.

A recent analysis of 93 cases treated prior to June, 1954, and 98 cases since that date revealed the following facts—

(a) The groups were comparable in regard to age and sex.

(b) Gastric lavage had no obviously beneficial effect. Indeed children so treated stayed in hospital half a day longer than those who were not washed out. [The average length of stay in hospital prior to June, 1954, was 3.3 days with lavage and chemotherapy, and was 2.7 days with no lavage and no chemotherapy.]

(c) Pneumonia occurred to the same extent in both groups.

Our experience in these respects is borne out by reports of American workers, and the low mortality rate from kerosene ingestion adds support to our present routine, which has also been used successfully in Perth for several years.

Summary

1. There is good evidence to suggest that gastric lavage is contra-indicated in the treatment of kerosene poisoning.

2. No pharmacist should advise emesis, which almost invariably leads to a broncho-pneumonia.

3. Any charts issued to the public by pharmacists should advocate the immediate administration of a glass of milk, followed later by a purgative dose of sodium sulphate (one or two teaspoonfuls of crystals). Such charts should urge the storage of kerosene in a locked cupboard or room.

4. Any kerosene swallower who is drowsy when seen by a pharmacist should be referred to a hospital immediately.

5. The A.P.F. 1955 does not advocate the use of emetics, but it does suggest the use of milk for gastric lavage.

6. Page 16 of The Extra Pharmacopoeia, Volume I, 1958, should be amended by pharmacists forthwith, and so should shop copies of the Adelaide Children's Hospital Pharmacopoeia, 1950, on p. 239.

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PHARMACY WHITHER?

A contribution to the discussion, "Projects in Hospital Pharmacy."

By Dr. John H. Lindell, Chairman, Hospitals and Charities Commission, Victoria.

I have been asked to forecast the possible course which pharmacy may take in a rapidly changing scene, and to suggest appropriate alterations in the course of study or in the practice of pharmacy which might adapt the profession to that course.

This is not an easy assignment. In a technological age, one bringing day-to-day changes in every scientific subject, it is hard enough to contemplate the future course in any field; but pharmacy is peculiarly and particularly involved. Its involvement ante-dates the very recent post-war technological impact; pharmacy for a long time has been heavily involved in the need for change.

It is easy to be wise in retrospect, and my comments should not be taken as suggesting censure for lack of prescience by those of us who practised 30 years ago; nevertheless the signs were there at the time had we had sufficient perception to appreciate them.

Until late in the 19th century, pharmacy assisted medicine in combating disease, largely through gunshot therapy not unmixed with a good deal of wishful, empirical thinking. This is not to be wondered at, because specific remedies, certain in their results, were few and far between. Some, like quinine, emetine, and digitalis, were well known, with a long and honoured tradition. Others, more recent in their advent, were the beginning of a biological avalanche. Jenner's smallpox vaccine was the forerunner of many vaccines and sera. The biologicals were on the horizon.

A search was on—the hunt for a specific drug which would control infections, or at least some infections. Shortly before, Ehrlich had given the medical world the results of his research into arsenicals for the treatment of syphilis. These were effective—by far the best of their kind to that time—but they suffered the disability of almost all specific drugs which had appeared. Side effects made them dangerous.

Most of us remember the caution we used in giving Ehrlich's arsenicals to a patient, and the rest periods between courses of treatment to avoid intoxication. We can remember the quinine headaches and the anxiety about a patient's liver and kidneys when gold was prescribed. Toxic side effects haunted doctor and pharmacist alike.

In 1935 Domagk produced the first of the sulphonamide group, and a miracle was achieved. Sulphanilamide was far from safe to administer; the list of toxic symptoms was as long as a hotel menu. We can remember the cyanosis, vomiting, and haematuria, to say nothing of blood effects. But this drug was the first of a series which gave the doctor an effective reply to many hitherto unmanageable infections.

The rest of the story is recent and well known. Fleming's remarkable acumen when he observed the effect of a penicillium spore on an open culture of staphylococci, pondered the reason and revealed his genius in correctly interpreting the phenomenon and following it up. How many before him must have remarked a similar sequence, but failed to appreciate its significance?

Then comes Florey, of very recent date, still searching for likely avenues to follow. Like Fleming, he appreciates the significance of the penicillium incident, gathers his team about him and penicillin is the result.

The doors are now wide open to admit the antibiotic era, with a steadily increasing flow of new drugs. We are still in the midst of that era and therefore too close in time, to assess its full significance. We have yet to weigh the miraculous benefits that are already evident, against the capacity of the organism to develop tolerance —that small, still voice, insistent and disturbing, which murmurs "acquired resistance."

This is no part of our present discussion, though it constitutes the medical challenge of today, in which the pharmacist, if he is to play his true part, must be heavily involved.

Here then is the story: In a few short years medical treatment has been revolutionised. The revolution is still with us and neither doctor nor pharmacist has yet been able to adjust his practice to the new concept.

The practical results to the pharmacist are evident. Specificity demands carefully controlled chemical or biochemical assay and dosage; this combined with a modern demand for simple means of administration—generally the tablet or the injection—has strengthened the position of the wholesale manufacturing chemist, until the great bulk of prescribing is a matter of transfer from the wholesaler's bottle or a direct sale of the product.

Compounding, as older pharmacists knew it; is not dead, but it is only a shadow of its former robust self. Pills, suppositories and pessaries have become museum pieces. The bland palatable mixture, clear and free from incompatibility, when it is not used as a placebo, is now more of a classical exercise than a significant shot in the doctor's armamentarium; emulsions are dying—do you remember sandalwood oil for gonorrhoea and cod-liver oil emulsions which gladdened the examiners' hearts? Ointments hold on tenuously; the rest is a matter of care and precision in interpreting the wholesale manufacturer's directions.

So much for treatment.

A similar and even more extensive revolution has brought about a wholesale change in diagnostic and control methods. This was born from a group of men—Virchow in the study of pathology, Robert Koch and Pasteur in the bacteriological fields—during the second half of the 19th century. Before that, medicine was a pure art, practised through a long training and experience by the doctor in disease symptoms and signs, perceptible to his senses. These men gave him new and precise weapons; the microscope, the test tube and culture media, supplemented stethoscope and percussion hammer. They have never replaced them, nor indeed are they likely to, but will continue to make steady inroads, obliging the doctor to lean even more heavily upon his scientific colleagues.

In the 20th century almost every new scientific development has a direct or indirect medical bearing. Electronics have been heavily drawn upon. Penetrating radiation from the Rontgen tube or from radioactive compounds, despite their extensive contribution to the present, have yet to find their full rightful places. Cellular biochemistry is in its infancy. In fact, long as is our list, the future in this remarkable era is likely to be even more productive than the past.

Medicine and medical education are themselves unadjusted to the change; this is hardly remarkable when development follows development with such rapidity. The doctor finds himself surrounded by a host of willing, if somewhat unexpected, teammates. The biochemist, the serologist and the pathologist are already well established, as is the radiologist. Technicians abound to handle the machines, the test tubes and the cultures. A dietician watches the patient's stomach; a psychologist assesses his mentality; even his social and domestic life is not exempt, the almoner examines these. The list could be extended almost indefinitely—'ologists and therapists, like Gilbert's dukes, are "three a penny" in this world of specialisation.

Whether this is in the best interests of the patient is not our present point. The effect is, that large portions of the former practice of medicine, whether in the fields of diagnosis or of treatment have been, and continue to be, detached from the whole. They are practised independently by a variety of specialists, each of whom reports in due course to a physician or surgeon standing somewhat uncertainly at the centre.

Where is the pharmacist in this melee for portions of the corpus? His traditional practice, we have seen, is shrinking, nor, as far as the ordinary practising pharmacist is concerned, has it been replaced by any new professional art. New developments as they appear have been avidly taken up by other chemists, biochemists, bacteriologists, technicians and what not.

The skill required to compound a safe and aesthetically acceptable preparation is no longer in demand. Toxicology retains its importance, but the responsibility is passing largely to the wholesale chemist. The pharmacist fulfils his obligation if he exercises due care in reading the wholesaler's label.

He is threatened even in his time-honoured position as pharmaceutical adviser to the doctor; the latter, already inundated by a flood of literature from the wholesaler, cannot cope with all that is presented; true, he still turns to the pharmacist for truth, but the pharmacist himself is in little better state than the doctor to assess merit amongst the welter of material available.

On the other hand, the pharmacist has extended his trading activities into fresh fields, although these inroads are, somewhat surprisingly, not so extensive as might be expected. In terms of time spent, his over-all dispensing work remains undiminished; in fact, with the advent of pharmaceutical benefits, he is more active than ever, but a change is manifest in the type and quality of his art. The average retail pharmacist may still devote a significant amount of his time to the true art of dispensing. In the terms of the number of prescriptions dispensed, the emphasis is on his work as an "agent" of the wholesaler.

Through this metamorphosis the pharmacist has lost little financially. In fact, one hears few complaints from pharmacists in this regard, and today he is probably better off financially, and in terms of time that he devotes to his business, than was his predecessor of pre-war years.

This is a serious contributing factor to the present situation, in which the pharmacist finds himself relinquishing professional responsibilities as he is lulled into a false sense of security by the jingle of a cash register. Man lives by meat alone, and most of are content to drift along, provided we are remunerated adequately without threat to our security and status. This is the situation in retail pharmacy today. Is the pharmacist, with all the advantages of a good income, a congenial occupation and a standing in the community, in danger of falling into complacency?

What of the other types of pharmaceutical practice? Pharmacists are employed extensively by wholesale houses, where their work is essentially professional and satisfying, though not so well rewarded materially as

that of their brothers in the retail trade. They are few in number and for this reason alone, not a significant group when we come to consider a new deal for pharmacy; moreover, many of these men have extended their experience and their education beyond the ordinary bounds of pharmacy. Nevertheless, the group, through wholesale drug houses, exercises a profound influence on the profession as a whole, which we have already noted.

Hospital pharmacists have developed their specialty in another direction. The absence of retail trading has left them freer to practice the art of pharmacy, an art influenced heavily by modern practice. Economy in the hospital field has stripped from their dispensing many of the niceties, almost the luxuries, that went with pharmaceutical practice a few decades ago. Stock solutions are the order of the day with simple mixtures, stripped largely of colour and flavour; unguents still make up a large portion of the preparations, but like his retail colleague, the hospital pharmacist must lean heavily on the wholesaler.

He has, however, extended his activities into other fields. Sterile procedures, including the preparation of parenteral solutions, are handled by him. He prepares injectible material in place of many mixtures. He has given up pills for tablets and on the rare occasions when a suppository is prescribed, he buys it. He takes apprentices, and with the facilities at his disposal, is able to train them very effectively in the pharmaceutical art, even in some practices of the lost art. He enjoys some advantages and suffers disadvantages when compared with the retailer. His proximity to the doctor and to the growing edge of medical practice, bring familiarity with modern trends, with the true effects of drugs and with their limitations.

Much, though not all, of the verbiage is, therefore, stripped from his practice. He enjoys the confidence of his medical colleagues and works closely with them in elucidating the effects of modern drugs.

He is, of course, removed from retail trade, consequently he suffers the loss which this deprivation brings. He loses financially and he is not his own master, except in performing his professional work. He manages a pharmacy department, but this is a very different proposition from running a busy retail store.

In summary, therefore, it appears that pharmacy in the main has adapted itself to changed and changing medical practice by taking a steadily increasing proportion of "agency" work for the manufacturing chemist, by accepting an ever decreasing proportion of true compounding, and by some extension into general retail trade. This has been accompanied by an over-all improvement in, or at least a retention of, the pharmacist's former financial status.

Two small groups have established themselves—pharmacists employed by manufacturing chemists in a specialist field, to develop and manufacture new products; and hospital pharmacists who practice a modified form of pharmacy heavily overlaid by "agency" prescribing and with a good deal of new work entailed by parenteral therapy and by their advisory function.

In determining a possible course for pharmacy to take we must first ask the question: Are we to prescribe what we believe the patient needs, or dispense a placebo that that patient wants?

If the latter, the answer is fairly straightforward. Most pharmacists have shown by acceptance of the present situation that they are prepared to continue an extensive form of pharmaceutical trading and a diminishing amount of the Art. In this capacity they serve a very real need in the community, acting as agents between manufacturing chemist and public, at the same time safeguarding the doctor in traditional fashion. In this, their professional scope of responsibility must continue to diminish as it has in the past. Their responsibility is to check the label and the dosage; at the same time they will act as advisers to the doctor, helping him to find his way through the multitude of preparations presenting.

This is not a professional occupation in any sense of the word, and acceptance by the average pharmacist of the situation is probably mainly due to the laissez faire attitude ever present amongst us. The work is congenial, the pharmacist is well paid and the drift continues, therefore, without significant opposition; moreover, although the revolution in medical treatment is so profound, its effect upon the individual pharmacy has been insidious—it has made itself apparent only over a number of years. Furthermore, the pharmacist of initiative has found plenty to occupy his mind. He has entered energetically into the merchandising side of his work, extending this in a variety of directions. He has taken assistants or partners and opened new shops, all of which have kept him occupied. Evidently, therefore, he is satified with his lot and probably would not accept a prescription which seriously interfered with his work or his income.

If we are to prescribe what we believe is needed, this should be towards restoring pharmacy to its professional standing. This would entail passing to the pharmacist professional work appearing as a by-product of the medical revolution.

But the biochemist, bacteriologist and their technicians are already firmly established in these fields. The pharmacologist has taken his share and, of course, physiologists and biologists have enlarged their own. As fast as a new development appears, the by-products are snapped up by professional ancillaries.

Some retail pharmacists have noted this trend and attempted to meet it. One, at least, planned a medical laboratory which was intended to provide biochemical and biological analyses for local doctors. It failed, because other professions were already firmly established in the field; moreover, it could never be considered seriously as an avenue for the pharmacist, because there is insufficient work to keep every pharmacist so occupied, and a standard quality of work could not be maintained amongst so many, each working with a limited amount of material.

What then are the possible professional fields into which the pharmacist might extend its activities? It seems to me that there is one field, almost a no-man's land, so far unoccupied by any one profession, but impinged upon, or infiltrated by several. This is the one embracing portions of pharmacy, pharmacology, bacteriology and nursing. It is, of course, well known to the manufacturing chemist, who is obliged to provide for the techniques practised by each of these professions if his products are to be efficacious and of standard quality. He, therefore, employs men qualified or experienced in these fields, and their work overlaps to complete the coverage.

It does not arise as a serious problem for the retail pharmacist, who accepts the manufactured product and thereby saves himself the trouble. It does, however, arise in hospital practice where the vacuum is filled, as by the manufacturing chemist, by representatives of each of the professions, and from their pooled experience the problems are settled.

Sterilisation, for example, as the basis of hospital practice, virtually concerns the pharmacist, because so many of his preparations are administered parenterally. It may be argued that the pharmacist is qualified in the subject and, therefore, in a position to apply such knowledge as is required. This is, of course, not so. There is a vast gulf between an academic knowledge of sterility and its application in practice. Every doctor knows this; fresh from his study of bacteriology he must learn to apply his knowledge in the practical field. So with the pharmacist, and this applied training is rarely followed up. The pharmacist, therefore, in this respect, speaks a different language from the doctor and the nurse.

Similarly with pharmacology. To be intelligible, this subject demands a knowledge of physiology, the biochemistry of the body fluids and tissues, together with anatomy. Again the pharmacist is at a disadvantage when discussing the drugs which are his responsibility; and it should be remembered again, that knowledge of the subject must not be confined to an academic nodding acquaintance, but acquired in addition through application.

Is this vacuum, that existing between nursing, pharmacology, bacteriology, medicine and pharmacy, the one to which the pharmacist might usefully apply himself; usefully, because in hospital practice particularly, there is a need for such a specialist. At the same time the work involved is of professional character and would, therefore, restore the pharmacist to the professional status which he is in danger of losing.

There appears to be little scope amongst retail pharmacists for this type of work. The tendency is, in private or hospital practice, to segregate such work in large laboratories or departments. Even small hospitals find themselves unable to give the necessary service; from this inability, taken with economic factors, has developed a concept of regional planning which provides that strategic hospitals are staffed and equipped to serve a comparatively large geographical region.

We face the situation, therefore, in which one part of the profession, those practising in hospitals, require a modified training if they are to extend the scope of their work effectively, whilst the other portion, and the larger, is concerning itself more and more with retail pharmacy in the modern sense. How are these two to be reconciled?

The situation might be met by adopting a form of elective training now well established in secondary and tertiary education; to divide the pharmacy course into several portions, a primary or basic course common to all students and comprising half or less of the course. On completion of this portion the student must elect to follow one or other branch of the profession; either to continue upon a course essentially the same as that applying at present, but with perhaps more emphasis given to the merchandising side of his career, or to undertake a new and separate course of study embracing more extensive work in associated fields—bacteriology, pharmacology, applied nursing, biochemistry. This study would equip him for hospital work, for work with the manufacturing chemist or in the private laboratory. Both groups would qualify as pharmaceutical chemists and each would be equipped for a particular specialty within his field.

The alternative is to follow the course which is already establishing itself, namely, to extend post-graduate work into the technical and professional fields. This could possibly achieve the same result as far as training is concerned, but in the end may create an irreparable schism within the profession, with the professional section turning increasingly to other bodies for its post-graduate education.

If pharmacy is to cope with its problems it should do so within the framework of its own organisations, professional and teaching. It should find the niche into which the future pharmacist will fit and train him appropriately. I believe that there is such a niche; it is for organised pharmacy to decide whether to accept it.

This is a suggested solution to an intricate problem; but there are others. In fact, some would deny that any problem exists; it is this fact, indeed, which may in the end prove our undoing, because unless a sufficient number interest themselves, the present drift will continue.

If it does, we may be sure of one thing: reinstatement of the profession will not become any easier. Time is a great healer and problem solver, but time is not on the side of professional pharmacy.

DEVELOPMENTAL PROJECTS IN HOSPITAL PHARMACY

By G. L. Burns, Chief Pharmacist, Royal Adelaide Hospital

The Royal Adelaide Hospital

The Royal Adelaide Hospital is a teaching hospital. It provides general and specialised services for all except midwifery and children.

In its teaching function, the hospital gives practical experience training in fields inclusive of medicine, nursing, radiography and physiotherapy. However, in this State, practical experience gained in hospitals is not at present recognised in the pharmaceutical curriculum.

The hospital was founded in 1840, and has now a bed capacity of 1,158, with a daily average bed occupancy of 997.

Replanning

A master plan has been prepared for a complete rebuilding of the hospital. This, when implemented, will provide for a total bed capacity of approximately 1,500. As part of this programme, a building which will be multi-storied, is now in the early stages of construction. Included in the accommodation to be provided in this building is a new pharmacy.

The present thus provides a unique opportunity for a complete reassessment and replanning of the pharmacy service of the hospital, to provide a service fully integrated with other sections of the hospital, and to effect it economically by planned working and the use of modern mechanical equipment.

Pharmacy Projects

"Developmental Projects in Hospital Pharmacy," the subject before this session, is, therefore, of great interest to the Royal Adelaide Hospital. In presenting some thoughts on our developmental projects, I propose first to give you the "headlines" of our planning, then describe their impact.

1. An Imprest System of Supply from the Pharmacy for Requirements—

(a) Prepacked supplies of such as mixtures, lotions, tablets, ointments, and uncompounded substances.

(b) Ready-packed ampoules and proprietary articles.

(c) Prepared sterile products.

2. A Modified Imprest Service for Dangerous Drugs and "Prescription Only" Supplies in Routine Use—

Maintenance of approved establishments in nursing stations.

3. Taking the Pharmacy Service to the Hospital for Non-Routine Supplies—

(a) Pharmacy collection of prescriptions and orders.

(b) Taking supplies to the points at which they are to be used.

4. An Extension of Preparation of General and Sterile Supplies—

(a) Manufacture of products in bulk with immediate prepacking into standard unit containers.

(b) Preparation of sterile products, including those previously not required in sterile condition.

Let us now consider some of the direct effects of the advances to be made by these developmental projects.

The Imprest Supply System

The pharmacy will maintain storage cupboard units at convenient points throughout the hospital. They will contain a comprehensive range of supplies in regular use, and are planned to serve groups of two or three wards.

Supplies maintained in the units will be standardised and include mixtures, lotions, tablets, injections, testing reagents, sterile products and disinfectants. Stocks will be so placed in the imprest cupboard units that in each a specific item will be in the same numbered position.

Consultation with medical and nursing staffs will be required to ensure that stocks made available by imprest are maintained in line with changing requirements.

Disinfectants, methylated spirit and similar supplies will be delivered on alternate days. Other supplies such

as sterile irrigations, mixtures, tablets and ampoules will be replenished daily.

Mixtures and lotions will be prepared in bulk, packed into standard containers and stored ready for issue, due care being taken to avoid over-stocking of preparations with short-period stability. Supplies of the disinfectant class will be prepacked into standard pint bottles and stored in crates ready for despatch.

Ampoules and proprietary supplies such as ointments will be purchased in ready-for-issue packs. It is considered that, except where a substantial saving is possible, it is not economical to repack. The injections proposed for imprest supply include ampoules of water, saline, vitamins, atropine and hyoscine.

Sterile products prepared in the pharmacy have gradually increased in range and volume. Our weekly output at present is over 3,000 units and doubtless will increase further. Those to be supplied on imprest include ½ litre flasks of Aminacrine, 1 in 2,000; Chlorhexidine, 1 in 5,000; Sodium Citrate, 3%; Sodium Chloride, in various strengths; and Water.

Maintenance of an adequate range of stocks from which wards can replenish supplies should eliminate hoarding and wastage, reduce the number of individual prescriptions, and effect a saving of nursing staff time, in addi tion to providing an improved pharmaceutical service.

Modified Imprest Supply

A modified imprest supply system is planned for stocks of dangerous drugs and those drugs issued only on prescription.

It is proposed to establish a quota for these supplies so that replenishments can be made at weekly intervals.

A pharmacist will undertake the maintenance of stocks of these drugs in nursing units.

Whilst making these issues, the pharmacist will inspect stocks for correct storage, and check stores and administration records of dangerous drugs.

New storage cabinets have been issued throughout the hospital. They are constructed in two sections, each with a separate lock. One section is reserved for dangerous drugs and the other for "prescription only" supplies, such as barbiturates.

Dangerous Drugs

The dangerous drugs section of the cabinet is arranged so that a separate drawer or compartment is provided for each kind and strength of drug, and one for the drugs administration register. Strict accounting is observed with dangerous drugs and this arrangement simplifies checking.

The following points in relation to dangerous drugs in nursing stations are of interest—

1. Excessive quantities are not permitted, to allow frequent checking.
2. Strict checking should eliminate misappropriated supplies.
3. The new cabinets emphasise the potency of the drugs concerned, and simplify supervision and control within nursing units.
4. Multiple-dose injections have been discontinued for the following reasons, from the dangerous drugs viewpoint—

(a) Accurate stock checks are not possible.

(b) Portion of contents could be withdrawn by an addict and the deficiency covered by addition of water.

(c) Ampoules can be checked accurately and shortages noted promptly.

Taking the Pharmacy Service to the Hospital for Non-Routine Supplies

Since the Royal Adelaide Hospital is a teaching hospital the requirements of a pharmacy service cannot be met in full by the provision of standard supplies on imprest.

In the field of therapeutic agents, new medicinal substances are continually springing up, and in a teaching hospital these must be clinically evaluated. Therefore, in the Royal Adelaide Hospital, additional provision must be made in the pharmacy service for supplies other than routine basic requirements.

The project is that a courier will call at wards and sections at regular intervals to collect prescriptions and requisitions, with subsequent delivery by a member of the pharmacy staff.

Extension of Preparation of General and Sterile Supplies

Extension of Manufacturing and Prepacking.—The manufacturing and prepacking sections of the pharmacy are to be considerably enlarged. This will be necessary to implement the system of imprest supply, and to meet other requirements of the hospital. Mechanical aids will be used wherever practicable for this work.

In this section of our new pharmacy planning has provided for a smooth work flow from initial ingredients, through manufacturing to prepacking, labelling and storing or assembling ready for despatch.

Those preparations which are required in quantity will be crated in units ready for sending out. Other products will be stored in a "compactus," a new type of storage unit providing considerably increased storage in a given area.

The project includes stock preparation for the requirements of the whole hospital, including those of outpatients' department, which is housed in a separate building but on the same grounds, and two branches of the hospital located at some distance from the central group of buildings.

Further, in order to avoid duplication of major items of equipment and of work, the project includes stock preparations for other hospitals of supplies required frequently and in quantity.

Extension of Sterile Products Preparation

The sterile section of the pharmacy has, through the years, undertaken work with material required for clinical trial and for preparation of the unusual.

The trend is for more and more preparations to be required in a sterile condition and in our planning due regard has been given to further increases in sterile requirements.

One aspect of this trend is the prevention of cross-infections which can occur in a hospital. A typical example of this are our requirements for sterile eye drops (their preparation, packing and use are explained in full in another paper).

The New Pharmacy

I would like now to show a plan of our new pharmacy, pointing out the several sections, and describe the planned flow of work.

Incoming supplies are to enter by a service lift and be taken to the unpacking and checking section.

From there, they will be transferred to other sections according to their nature—to the refrigerated store, the transfusions solutions store, the bottle washing and drying unit, or the liquid or dry drugs store.

From these points supplies will go to the manufacturing section with a prepacking, labelling and storage sequence, and to sterile and extemporaneous dispensing sections.

All supplies will leave the pharmacy from a common point.

Other features are an office and a library. An emergency supply unit is to make available to medical officers outside of pharmacy hours, requirements not held on general imprest. The library is designed for reference purposes and for a continuation and extension of our existing system of therapeutically classified information for medical officers.

A complete index of all material in the department will make for effective stock control and facilitate working for staff.

Summary

1. The projected imprest system for routine supplies will provide an improved pharmacy service. Experience elsewhere has shown that supplies available as required on imprest, eliminates the tendency of wards and sections of a hospital to hoard material against unforeseen demands.

2. Ordered supply of dangerous drugs and potent supplies will improve the pharmacy service, save a considerable amount of staff time and ensure effective supervision and control.

3. Provision of a courier and delivery service for non-routine supplies is obviously an ideal pharmacy service for implementation. Moreover, staff from wards and sections are not taken from their functional duties to undertake repeated individual journeys to the pharmacy. Thus it will give a better service, fix ward and section staffs to their locations, and effect considerable economies. It will, moreover, ensure an even flow of work coming to the pharmacy.

4. Prepacking of routine supplies into standard units at the time of preparation is a corollary of the effective and economical implementation of the Imprest supply system. Centralised preparation of supplies required frequently and in quantity will avoid duplication of work and equipment. Plans for the new sterile preparations section of the Pharmacy envisage increased requirements for sterile supplies, and service for the experimental and new work required by a teaching hospital.

It was stated earlier that the aim of our developmental projects was replanning to provide a better pharmaceutical service to the hospital. We believe that when our plans have been put into operation, we will have achieved that objective.

It gives us pleasure to submit to this session plans of our developmental projects. We, in turn, believe that we have something to learn from those here present, and from papers being submitted by other hospitals.

Acknowledgments

I wish to express appreciation to the Royal Newcastle Hospital for the opportunity of studying the imprest supply system in operation, and to my colleagues at the Royal Adelaide Hospital for assistance in the preparation of this paper.

THE ROLE OF THE ETHICAL MANUFACTURER IN MODERN MEDICINE

By G. T. Peterson, Ph.C., F.P.S., F.I.S.M., A.F.A.I.M.
(Sigma Co. Ltd.)

At the outset may I say I am referring to "medicine" in its less general term and intend to confine my remarks chiefly to that branch of medicine as practised by the physician rather than the surgeon.

If we briefly trace the evolution of the ethical pharmaceutical manfacturer as we know today we should refer to some monographs of the early Pharmacopoeia, for example, Tr. Aurant. What can be more simple than the process of maceration—well known and practised by most of us, even if only as an apprentice?

Perhaps we should look at another monograph, this time, Tr. Card. Co. The preparation of this galenical involves a little more time and equipment—the process of percolation—but still a process which has given most of us a great deal of personal satisfaction to be able to produce an elegant tincture by percolation.

Thinking of a little more advancement, we may consider Tr. Digitalis. This monograph presents a further problem in that the preparation of the tincture is quite simple, but the biological assay of the product is not a straightforward routine pharmaceutical procedure. We must therefore begin to see the utilisation of a specialist's services to effect this assay.

Here we see a simple A.P.C. mixture. Quite an easy matter to dispense. However, at this stage of progress either the pharmaceutical chemist or the public or both, were looking for something more convenient to take (or carry), and so we see the necessity and advantages of A.P.C. tablets.

The demand for A.P.C. tablets grew so rapidly that it was not possible to satisfy this demand with the output from hand machines on a dispensary bench behind the the shop. In effect, we see the need for a bulk manufacturer. Bulk manufacture calls for a greater quality control and check on the mixing process involving larger quantities, and so we see the need for a quality control laboratory to assay such tablets before being released for sale.

Such a step up marked the advent of "favourite prescriptions in tablets or capsules" for convenience, and the demand for such pharmaceutical formulations grew quickly. For example, Tab. Theobrom. Co., Tab. Codein Co., Effervescent Three Bromides Tablets, etc.

These new prescribing and dispensing trends were readily accepted. Indeed, I can recall during my own early association with pharmacy, a qualified chemist remarking to the effect that he would prefer to scrape the label off an ethical pack rather than dirty a pestle and mortar. As many prescriptions in those days called for vegetable extracts, etc., the colour of the finished mixture varied so much that in order to eliminate such complaints and to ensure a uniform appearance of the product, the habit of prescribing pre-manufactured formulations and specialities increased.

Both the pharmaceutical chemist and the prescriber has adopted pharmaceutical manufacture as an integral part of their practise of medicine.

Here we see a monograph relating to "Injection of Penicillin." This monograph stipulates sterile dispensing —a very costly business requiring expensive equipment —not a reasonable investment for the small retail dispensing business. Therefore we see this particular manufacturing process left for the ethical manufacturer.

What happens if the dispensing chemist prefers to prepare his own "Injection of Penicillin B.P."? The product is not prepared completely until it has been tested for sterility (an eight days' process); biologically assayed for potency (24 hours' process) and tested for the absence of pyrogens and undue toxicity.

By now the commercial race had begun and many ethical manufacturers were in private healthy competition trying to improve their own particular products. We should realise that such competition is necessary for progress and continued development.

With the extensive equipment and facilities and the skilled staff necessary for the above processes, it became necessary for the pharmaceutical manufacturer to utilise such investments to the maximum benefit of all concerned, and so we begin to see many pharmaceutical research projects undertaken. This research was either applied research or original research.

Might I say that without such commercial help, Sir Alexander Fleming could never have offered the benefits of penicillin to the world. Even if small-scale production had been envisaged, the price of the treatment would have been sufficiently prohibitive for far too few to appreciate its value.

In an endeavour to keep up with overseas trends and developments we find the local ethical manufacturer continually investigating the possible application of overseas developments to local conditions. It is worth recording here that variations in standard of living (including hygiene and diet), make it impossible to predict local results comparable with overseas case histories. Our healthy climate, ample supplies of fresh vegetables and dairy produce, do much to eliminate avitaminoses as seen in some of the overcrowded and underfed populations of some not-so-fortunate countries.

Representatives of ethical manufacturing houses, and indeed the ethical manufacturer himself, are frequently criticised for "hounding" the poor doctors into using various forms of therapy or particular product formulations.

Should we not accept the fact that today's high standard of living is a tribute to the salesmen. Think of what this statement means! Name any article you like from motor cars to axes—any item that relieves man's burdens, enriches his life, gives him better health, gives him greater pleasure, gives him more leisure, and you

will find some salesman has played an important role to bring the benefits of the manufactured article to the consumer. In short, the average salesman truly contributes to human welfare through his efforts in raising the standard of living and, in fairness, this must be said of the genuine medical representative of an ethical pharmaceutical manufacturer.

During the course of my travels, I have visited many doctors, many of whom I am now honoured to know as personal friends. When visiting these doctors from time to time, it is surprising the number of times the greeting is "What's new?" I know several people with similar interests have similar personal experiences.

Many years ago the doctor would call at the local pharmacy and discuss his proposed treatment and ask the chemist's advice as to which drugs could be prescribed in a mixture, and whether the mixture would be satisfactory as regards compatibility and taste, thus a new prescription or modified formulation was produced to suit the patient's needs.

Nowadays the intending prescriber either checks his ethical manufacturer's Product Manual, his Physicians' Index or other literature, or alternatively consults the local chemist regarding the availability of a particular prescription specialty.

This transition is indicative of the ready acceptance of the services and benefits offered by the ethical manufacturer to both the medical and pharmaceutical profession today.

Last year it was my privilege to present to some members of this section meeting in Dunedin, some thoughts relating to the changing role of the pharmaceutical chemist. In this paper[1] I emphasised the challenge and the benefits which modern ethical specialties offer today's pharmaceutical chemists. The products of pharmaceutical research and drug development are quickly accepted, and a glance at the list of ethical specialties included as N.H.S. items (classified as life-saving drugs), provides recognition which speaks for itself. Eighty per cent. of the drugs prescribed today were not available 10 years ago, and their advantages are reflected in our daily surroundings—

(a) Increased national productivity.
(b) Reduced periods of convalescence.
(c) Extended expectancy of life.
(d) Improved standard of living.
(e) Improved public health, including preventive medicine, infant welfare, etc.

I think we should give some consideration to the **relationship of the ethical manufacturer to the physician.**

I would like to make myself perfectly clear and emphasise that in no way does the ethical manufacturer consider the properties of his pharmaceuticals overshadow the skill of the physician. The individual touch and accurate diagnosis are essential for the patient to fully appreciate the benefits of the prescription specialties available.

It is the constant aim of the Australian ethical manufacturer to provide the medical profession with drugs and therapies in keeping with latest local and overseas developments. To do this the ethical manufacturer must maintain (a) a highly skilled technical staff; (b) adequate laboratory and manufacturing facilities; (c) a good medical reference library; (d) constant literature surveys; (e) a good liaison with overseas manufacturing houses for exchange of ideas.

Speaking for my own company, we unhesitatingly consider our facilities as an ally and our products an aid to the busy physician. In so doing it is very gratifying to realise that many of our medical friends reciprocate and look on us as their trusted ally. Such goodwill and harmonious relationships are built on mutual trust. To maintain this mutual trust the ethical manufacturer must (a) keep his price reasonable; (b) support his advertising with honest factual evidence; (c) promote his products to the medical profession only; (d) release advance information through medical channels only and not through the Press or popular magazines.

The Ethical Manufacturing House likes to think that its Medical Division, its Research Division and its Developmental Division are developing a partnership with the medical profession in service to the general public. As I said before, without accurate diagnosis and the professional skill of the physician, new drugs would be very quickly considered worthless.

This partnership is extended in many cases when physicians and practising clinicians undertake the task of evaluating new products before general release. Frequently new product formulations are discussed by the Medical Division personnel and practising physicians before any actual work is handed to the laboratory as a research project. In other words, the ethical manufacturer produces what the physician needs most in his practice and not what the ethical manufacturer wants to sell. This, therefore, classifies the genuinely new ethical product as something designed to fill a hitherto unfilled demand.

Pharmaceutical advertising and medical representation of the ethical manufacturer must be sufficiently comprehensive to disclose limitations, side effects and contra-indications of a new product. Clinical reports are made available and, furthermore, the trade names by which these new drugs are known, must be easy to remember in that they should suggest either the therapy, the drug or the indication.

A thought about the **relationship of the ethical manufacturer to the specialist clinician.**

We like to think that an harmonious two-way relationship exists here. Sometimes the specialist requires a particular preparation. For example, an eye specialist may require a preparation of certain consistency and physical properties and possessing an anaesthetic, mydriatic and antifungal (antibiotic) action without any degree of irritation. Such a request has come under my own personal attention. Alternatively, the ethical manufacturer consults the specialist for his advice regarding the most desirable attributes for a certain type of medication not currently available.

If we look at the **relationship of the ethical manufacturer to research and teaching institutions,** we find that frequently the ethical manufacturer is consulted on technical problems, answers to which are often required for the information of the research worker or practical exercises of the student. Examples of such enquiries which can be called to mind are—

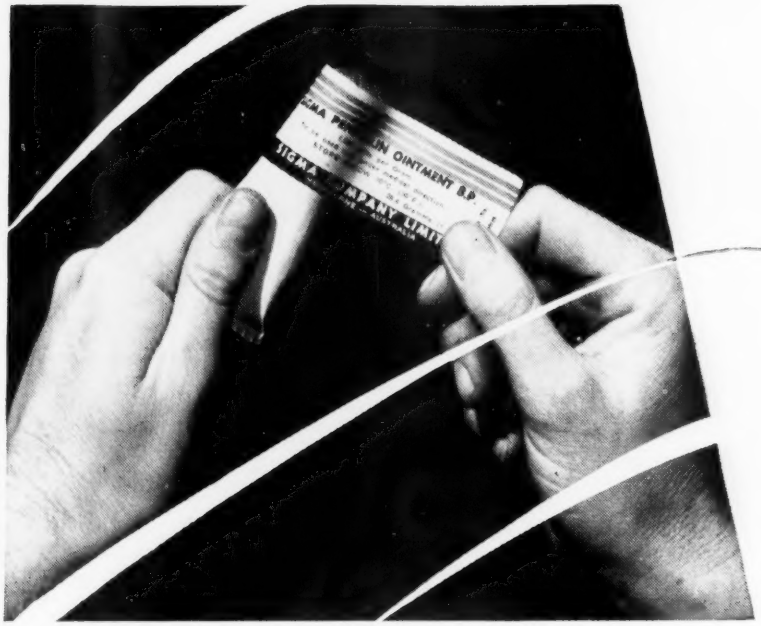
(a) How to sterilise lactose without discoloration?
(b) What grades and purities of certain raw materials are commercially available?
(c) Details of drying techniques, for the preparation of granules and subsequent recommendation for tableting.

More practical assistance is often rendered to research schools by—

(a) "Siliconing" laboratory glassware.
(b) Investigating the possibility of "siliconing" blood transfusion equipment.
(c) Obtaining from overseas small quantities of raw materials or newer synthetic substances for local evaluation.
(d) Making available certain equipment, for example, freeze drying plant for lyophilising certain materials.

The ethical manufacturer maintains a very close working **relationship with official pharmacy and its allied associations.** For example, the ethical manufacturers frequently offer the benefit of private research to the editorial committees of authoritative reference books. A quick glance at the current B.P. reveals a number of monographs containing details which were once the private property of the discoverer and manufacturer, e.g., Iopanoic acid, Sulphadimidine, etc.

A similar perusal of the A.P.F. 1955 reveals a monograph entitled "Insufflatio Penicilli A.P.F.," with the additional notation that "Duocillin of commerce fulfils the requirements of this product." On further looking



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into this statement we find that the experimental work leading to the development of this formula was published in the "Medical Journal of Australia,"[3] November 22, 1952, by Professor F. H. Shaw and the writer after many series of experiments.

Examples such as the above could be quoted over and over again, but time will not suffice.

Dr. Newell Stewart, executive Vice-President of the National Pharmaceutical Council, speaking at the 50th Anniversary Convention of the Canadian Pharmaceutical Association is reported[4] as saying "The language of science acknowledges no frontiers. Only in science is there a benevolent and unrestricted commerce in discoveries and ideas." Commenting on the future role of pharmacy in both Canada and the United States, he predicted "the value of the pharmacist to the community in the future will depend more on what he knows than what he does." Increasingly, it will be the responsibility of the pharmacist to collaborate with the physician, not only by keeping abreast of the new and better compounds, but also by filling the role of public educator, by seeing that the customer is adequately informed. By this the pharmacist should make sure that his customer understands the full meaning of the medical news he reads in magazines and newspapers.

Dr. Stewart warns, "One thing we may as well accept, we will probably do less and less compounding. But the need to keep abreast of the profession—to know new drugs and dosages and properties—is greater than it ever was before."

Having briefly traced the relationship of the ethical manufacturer with those other members of the medical health team, I could no better summarise these thoughts than by again quoting Dr. Newell Stewart, to whom I have referred already, and who defines the real meaning of a prescription as an actual act of faith in the physician, the pharmacist, and the reputable pharmaceutical manufacturer.

Wherever the subject of pharmaceutical manufacturers and ethical specialties is introduced, invariably the question of price of prescription specialties is raised.

Since presenting some thoughts on this subject at our last meeting in Dunedin, I have been quoted on the other side of the world as stating that "today's prescription is the biggest bargain in history." This statement was, of course, preceded by a summary of tangible values of today's prescriptions, plus a reference to intangible values, such as better health, longer life, compounders' skill, professional protection from overdosage, etc. On this same subject the following question from a physician, and answer is quoted[4]—

Question: Why does not someone in authority question the cost of new drugs and medications? Why should cortisone products, made cheaply from the Mexican yam, cost the patient 30 to 35 cents a tablet? Why should the broad-spectrum antibiotics still cost 50 to 60 cents a capsule of 250 mg? I am sure that, after the initial cost of developing these drugs, they are inexpensively made, but the price has not come down after the initial reduction three or four years ago. These are only two instances where a price reduction would give the patients a lift with no hardship to the producers.

Answer: Price reductions depend on two factors—volume production and volume sales of the product. Until both have been achieved, the marketing of the product must remain "expensive." One pharmaceutical manufacturer, who has had pharmacy schools audit 200,000 prescriptions filled in 250 stores in representative areas of the nation, reports an average prescription price of 2.51 dollars for the first six months of 1955. In contrast, a new specialty product in the field to which the physician inquirer refers was introduced in February, 1955, and the present average prescription price of this product is 8.08 dollars. The same survey showed that 80 per cent. of all of the 200,000 prescriptions were sold at 3 dollars or less per prescription. It may be that Mexican yams are cheap, but, as regards cortisone products, one large reputable pharmaceutical manufacturer gives as one of his reasons for not entering that field: "the extremely complicated and expensive manufacturing process for that product." The U.S. Department of Commerce gives the amount spent by consumers in 1954 for "drugs and sundries" as 1,631,000,000 dollars, or 10.12 dollars per capita, and the results of the prescription survey referred to above indicate that about 6.43 dollars of that per capita amount is for prescriptions. Either sum seems rather insignificant when compared with consumer per capita expenditure for alcoholic beverages of 55 dollars in 1954. A further indication that prescription prices are not, on the whole, out of line is that the price index for prescriptions in 1954 was 115.8, as compared with 114.8, the index for all consumer goods and services. The index for prescriptions is one of 20 available sub-indexes that make up the group index for "medical care and drugs," which was 125.2 for 1954. For two other main items in this medical care group—physicians' fees and hospital room rates—the indexes were 119.1 and 156.9 respectively. The one is slightly higher than the index for prescriptions, and the second is very much higher. While these data do not serve to answer the reader's specific inquiry, they do serve to give perspective. The pharmaceutical industry is as highly competitive as any that can be named. This industry is very much aware that the physician-patient relationship is such that the physician does consider the matter of price if there is any choice open to him in selecting prescriptions. All of the evidence is that this severe competition forces the industry to do almost as much research to achieve cheaper production and marketing as it does to develop the new, or better, products to which the inquirer refers. As soon as just one producer of these products is able to produce and market them more cheaply, he will certainly do so, with the object of forcing his higher-price competitors out of the market. This will cause other producers to accelerate efforts to improve their own production and marketing techniques. Further price cuts, with eventual stabilisation at a lower level, will be the result. Penicillin, streptomycin, and cortisone have all had price histories that seem to demonstrate the validity of this conclusion."

In a subsequent edition[5] of the same journal we read, "As a pharmacist I also had often questioned the failure of the large pharmaceutical houses to reduce the price of their products after they had obtained the original cost of research. My questions were answered, however, on a recent tour of one of the larger pharmaceutical plants in the United States. I saw a tremendous amount of research, both time-consuming and expensive, being conducted by a host of top scientists. The future of this company, like many others, is tied in with the development of new products. Millions are spent yearly on pharmaceutical research, and the cost is partially defrayed by the profits from recent products. The prices of today's so-called miracle drugs cannot be reduced, because they are financing the miracle drugs of tomorrow."

We should not overlook the relationship of the ethical manufacturer in the service offered to civilian needs in that during war-time much research went into the production of water sterilising outfits and other necessary equipment for the well-being of troops. Furthermore, in cases of national emergency many of the ethical manufacturing houses are called on to supply at a moment's notice, practically unlimited supplies of synthetic blood plasma, wound dressings, etc.

In the role of public health the pharmaceutical manufacturer offers advice to such questions—

(a) Will the administration of creosote capsules interfere subsequently with the efficient working of a septic tank used by the patient?

(b) Has the extensive use of penicillin by farmers for the treatment of bovine mastitis contributed to "penicillin-resistant" infections in such rural districts?

The impact of the ethical manufacturer is expressed also in the various financial assistances given to research schools, university grants and bursaries, travelling scholarships, all of which indicate a willingness to share

some of the profits in an endeavour to construct improved medical, teaching and hospital facilities and services, in a constant effort to improve public health.

I will not dwell too long to discuss the **relationship of the ethical manufacturer and the pharmaceutical chemist.** It was, I hope, adequately discussed in my paper dealing with the changing role of the pharmaceutical chemist', previously published. Suffice to say that the increasing number of qualified pharmaceutical personnel in the pharmaceutical industry has brought about a much closer relationship between industrial and retail pharmacy. Pharmaceutical chemists in industry have at their disposal greater technical facilities than those in retail pharmacy, and a concerted effort is produced in today's prescription to ensure protection from incompatibilities (both unintentional therapeutic and physical); improved efficiency and greater stabilities. This increased stability has been one of the greatest contributing factors to the changed appearance of dispensary shelves; extemporaneously dispensed medications have a shelf life limited to days, whereas many ethical specialties are preserved for indefinite periods, whilst other products such as antibiotics, have a shelf life varying from one to three years, under ordinary conditions of storage.

The ethical manufacturer provides the pharmaceutical chemist with the materials to fill modern prescriptions; the extemporaneous dispensing of which is not practical. The "materia medica" for modern dispensing practice is not raw material, but a finished "pre-manufactured" product. Such dispensing permits the retail pharmaceutical chemist to render a greater service to the public. In addition, the ethical manufacturer provides the necessary knowledge regarding possible incompatibilities, shelf life, possible side-effects and contra-indications (if any); all of which enhance the prestige of the pharmaceutical chemist who considers it part of his service to understand his new "materia medica."

In addition, the larger ethical manufacturer provides a Medical and Pharmaceutical Information Service. This service provides information on many overseas unobtainable or unknown ethicals and often suggests a locally available alternative. Current opinion on dosage routines or advice re awkward dispensing procedures are also appreciated by the practising pharmaceutical chemist. This I know as I have been associated for some time now with a company which has been built on service to the pharmaceutical and medical profession.

Having reviewed the role of the ethical manufacturer in modern medicine, and having in mind the medico-pharmaceutical liaison committees, ethical manufacturers' associations, the various codes of ethics for pharmacist-physician-patient relationships, I am led to hope that we have commenced an era in which the pharmacist will give continued recognition and respect to the position of the physician, the physician will give continued recognition and respect to the position of the pharmacist, and the ethical manufacturer will give continued recognition and respect to the position of both.

It can be seen, therefore, that we all have a part to play in the problems of public health; we each can accept our responsible and onerous tasks, but cannot (and would not wish to) relieve our individually skilled specialist confreres of their responsibilities. Responsibilities and priviliges go hand in hand and, by tradition, we would wish to accept both.

I would like to add that the personal presentation of this paper has been made possible by the generosity of the Directorate and Management of Sigma Co. Limited. I would also acknowledge the generosity of Lakeside Laboratories, Milwaukee, U.S.A., for the film, "The Constant Search," screened at the conclusion of this paper.

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3. "A.J.P." (1957), Sept. 30, 1024.
4. "J.A.M.A." (1956), June 23, 772.
5. "J.A.M.A." (1956), Oct. 20, 850.

SCIENCE SECTION

A BALANCED PARTNERSHIP—SCIENCE AND BUSINESS

(Broadcast version presidential address British Association, Glasgow meeting, August, 1958)

By Sir Alexander Fleck
Chairman, Imperial Chemical Industries

In a population like that of Britain, which depends so much on science, it is sad, I sometimes think, how few people clearly understand what it is all about. As I see it, science is an approach to an understanding of the universe along a broad highway of organised knowledge, firmly founded on observation and experiment, embedded in a matrix of theory. It is a highway that is constantly being widened and extended and repaired. We are building it because we think that it is a good road for mankind to travel, away from ignorance and wretchedness towards a fuller life and a better world. But scientific effort on a great scale costs money; it also costs scientists who are expensive people to educate. If we as a nation are to stay solvent the sums we require can come from one source alone, the wealth we produce. In this context it is easy to see the importance and responsibility of business, on the successful running of which our capacity to extend our science and education largely depends.

It is difficult here to avoid being at once too general and too particular. I have chosen to speak of business because business is a more comprehensive term than industry. At the same time I intend to consider primarily the larger units, although naturally I recognise the importance of the smaller ones. Defining the limits of my subject in this somewhat arbitrary way will for the moment do service for a formal definition. After all, "business" is a vague word, perhaps for euphemistic reasons in the past, even deliberately vague. Nevertheless, I venture to put forward three characteristics, which I think a business should have if it is to function effectively over a period of years.

First, it must contribute to the well-being of the community and its social evolution. When business takes on itself the deployment of financial, material, and human resources, it also takes on, I believe, the responsibility for seeing that they are properly and effectively used. In other words, it has an obligation to the community. Secondly, business must have the capacity to change its methods and, if necessary, even its objectives. It must be constantly alert to see that its products or services meet or anticipate the needs of the public, and to withstand the keen winds of competition. Finally, if it is to be self-perpetuating through growth or modernisation, a business must dispose of its products or services for more than their cost—or, in plain language, it must make a profit. Only from the excess of income over expenditure can we finance the expansion of business and science.

This brings me again to the reason why I have chosen to talk about business rather than industry. It is an old saying that money makes money; by the same token the production of wealth requires the investment of wealth.

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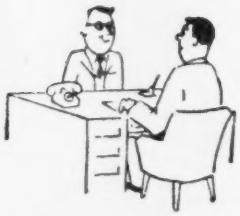

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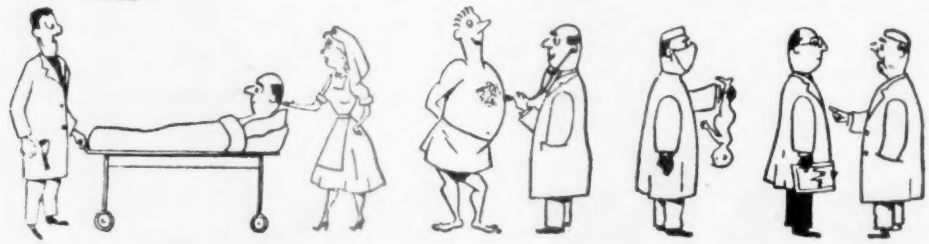

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There is, of course, no exact relationship between the amount of income ploughed back and the rate of economic growth. Nevertheless we can compare, for example, the experience of the United States with that of this country. Over the past forty years the United States has invested about half as much again in relation to its resources as we have and their national product has risen at an average rate of about three per cent. per annum, against our two per cent.

I do not wish to strike a note of disappointment so much as to remind you of the classic virtues of abstinence, saving, and investment. In fact, during the past ten years the United Kingdom's investment in productive resources has shown an encouraging growth. If science has laid the foundation for much of this expansion, business has provided the will and the means to complete the structure.

The World Does Not Owe Us a Living

There is another reason why it is important that this partnership should continue to flourish. We have in these islands more than 50,000,000 people who, as a result of the export of goods produced by manufacturing industry and the services provided by finance and commerce, enjoy a material standard of living surpassed in few other countries. But the world does not owe us a living; we can only enjoy the standards that our business enterprise and scientific knowledge enable us to earn through our exports; and given the growth of industrialisation in underdeveloped countries it follows that we must concentrate on the development of new products and new processes: we are obliged to rely either on selling things that no one else has yet learnt to make, or make as cheaply, or on marketing our skill and "know-how."

We all know what can happen if we fail to make technical progress. At various times some of our long-established traditional industries, in which we were pioneers, have suffered from the lack of proper scientific direction. In my own industry, organic chemicals once experienced the same neglect. And the lesson has not yet been fully learned, because even today we meet the same situation. There is still a tendency to relegate the scientist to the back room. But such a relationship is very different from the partnership of science and business that I have in mind.

How can this partnership be achieved? One way, at least, is to make sure that the scientist has an influential place in the business structure. In a technological business we can distinguish some six or seven separate functions: finance, commerce, personnel, operation or production, design and construction, research and development. In some of these the place of the scientist is self-evident. Take, for example, research and development: research has been called the life-blood of industry, but I prefer to liken it to the pituitary gland which, I am told, after doing little that is obvious for several years except consume nourishment, at length stimulates other parts of the organism to develop and makes it capable of production.

Design and Construction

Emphasis on new products and processes makes the importance of research and development obvious. Next there are the functions of design and construction, which are essentially the field of the technologist or engineer. His grasp of scientific principles fits him, above all, to build a bridge between science and business. Because the production or operation function includes the application of technical methods often according to a routine, it is sometimes considered humdrum compared with research. Yet it is just as great a mistake to believe that unqualified men who come up what used to be called "the hard way" are generally adequate, let alone best, for production work, as it is to hold that good technical people are wasted in plant management. On the contrary, they must be encouraged to regard it as a necessary part of their training for higher management.

Equally, in non-technical departments the scientist can do a useful job: in personnel work by placing technical staff to the best advantage of the business and themselves, and on the commercial side, especially where technical, complex products are sold.

At this point it is pertinent to ask, if scientists are to play an important part in management, is the balance between science and business likely to be upset? I think not, for three reasons. First, as British industry is at present constituted, the balance is still heavily weighted against science. Secondly, in businesses where scientists rightly play a prominent part in administration, non-technical men who nevertheless have a good understanding of scientific principles are with advantage sometimes put into semi-technical jobs, and this helps to maintain a balanced partnership. Thirdly, and most important, the balance that we seek must come in great measure from within the individual himself, a balance provided by education. This, besides being central to my theme, is very much the personal concern of many of those attending this meeting of the British Association.

There are several senses in which we might consider balance in education. The first arises from two different conceptions of its purpose. On the one hand there is the formation of character, and the development of intellect and personality. At the other extreme is the concept which finds its most powerful expression in the educational philosophy of Soviet Russia, that the purpose of education is to provide useful members of society in which the desires of the individual must be subordinated to the needs of that society. I do not believe that these two concepts are wholly conflicting nor that the second runs completely counter to the British tradition of individual liberty. A balanced educational system should have room for both.

Wider Horizons

Then, in another sense of balance, there is the need for those who study the humanities to have some understanding of the workings of science, and for our scientists to widen their horizons by relating their science to its human context both historically and in terms of the present day. The gulf which at present separates our scientists and non-scientists is much more easily bridged than is often imagined. For example, the qualities of mind that are fostered by studying chemistry and history are very much alike. Both must be imaginative, the chemist in advancing hypotheses to predict the future, the historian in doing so to explain the past.

There is a final sense in which I refer to balance in education. I have said that we demand from our scientists and non-scientists alike intellectual qualities, such as curiosity, judgment, and imagination. Equally we want our young people, whatever their branch of study, to possess high qualities of character. The society which a balanced partnership of science and business can help to build will, as always, call for courage, integrity, and tenacity. These are some of the ideals that we might have in our minds, as we each address ourselves to the problems of education for an age of science.

Throughout my address I have tried to show why science and business must be partners: the advancement of science can be achieved only with the resources that business can provide and, if business is to provide them, then it must bring science to its aid. I have also suggested that a truly balanced partnership will manifest itself in the growing use of science and its methods in business; and that it can come only from a balanced education for scientists and businessmen alike.

—"The Listener," August 28, 1958.

TRENDS IN PHARMACOLOGY

It may be a disquieting thought—at least to the students concerned—that those qualifying in pharmacy this coming month may find a large part of their knowledge modified and even out of date within the next five to ten years by new discoveries in pharmacology. However, similar conditions, not always acknowledged to exist, have prevailed to a greater or lesser extent for some time. Mentioning the point does, however, serve to emphasise the ever-accelerating pace of the technological revolution. In the days of Ehrlich medical thought was revolutionised by his imaginative chemical and biochemical researches and discoveries. The waves of discovery Ehrlich set in oscillation eventually swept away the static concepts that had impeded advances in medicinal chemistry. The discovery of the sulphonamides shortly before the 1939-45 war founded a new science of chemotherapy. Many of us looked forward to an era in which, provided we learned the rules, we could summon new drugs into being with almost less trouble than the tailor takes in measuring us for a suit. The measurements of the disease appeared to be known and all that was needed was to find the drug that would fit it like a well-cut garment. That, alas, was too easy a hope, and one that has not been realised. The dream of achieving a therapeutic purpose by playing with methyl groups or substituting alternative chemical nuclei has usually remained but a dream. But a promising new line of approach to specific drug effect has been drawn by Professor Adrien Albert, who has shown that chemotherapy is controlled by pharmacodynamics. Dr. Albert's approach suggests that a drug's action may be defined in terms of ionising constant, chelating constant, receptor factor, and so on. Those technicalities may tend to alarm pharmacists of the old school, but let them not be discouraged. It is worth the effort to investigate a little further, and to try to understand the new discoveries. On closer examination the new trend in pharmacological research does not seem quite so novel. It is in line with the fundamentals of the craft. A drug to be effective must be made available in a suitable medium and provided in a form determined by the site and characteristics of the disease. The new trend in pharmacology follows that pattern, one which we all know from the earliest days of our apprenticeship. What Professor Albert's lecture does is outline the more accurate means now available for measuring the elements necessary to provide an effective medicinal agent.—"Chemist and Druggist," June 14, 1958.

TABLET COLOURINGS IN B.P. 1958

"Lancet" Comment

We print below portion of a leading article which appeared in *The Lancet* (5/4/58) on the controversial subject of the use of colouring agents in tablets.

It is only fair to say also that the attitude of the pharmaceutical industry towards the Pharmacopoeia Commission has been characterised by enlightened benevolence. All the leading firms have been quick to recognise the intrinsic worth of the *Pharmacopoeia*, and they have encouraged their experts to help the Commission in every way possible. Further, they have regarded the inclusion of their products in the B.P. as a coveted token of official recognition of the therapeutic value of these preparations.

In this context the *B.P. 1958* may mark the end of an epoch. Among the "principal changes" to which reference is made in the introduction is the following statement regarding the use of colour:

"Permission has been given in a limited number of monographs on tablets for the addition of a suitable colouring agent to the coating, because unfortunately uncoloured tablets have not been made available. Similar provision has been made for some capsules."

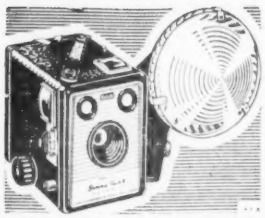
The use of colouring matter in official preparations—except where there is a clear pharmaceutical justification—has been consistently forbidden by previous Commissions. The medical practitioner may be unlikely to regard this veto as of much importance: if manufacturers prefer gaudy pharmaceuticals they are only falling into line wth the confectionery trade and the motor-car industry. Nevertheless, doctors must be increasingly aware that the polychromasia of the chemist's shop has introduced new hazards. The reference to a "principal change" is ominous, for clearly the commissioners were obliged to make a choice between principle and expediency. The manufacturers say in effect:

"Here is a new drug synthesised and owned by our firm. It has been shown by rigorous clinical trials and by wide experience to be therapeutically valuable. You —the Pharmacopoeia Commission—can hardly avoid including it in the next *B.P.* or *Addendum*. Now we, as the sole manufacturers, have decided to release this drug only in the form of a tablet with a coating artificially coloured blue. If therefore you include the drug itself in the *B.P.*, you must accept our directions about the colour of the official tablet. If you publish in the *B.P.* a monograph describing the drug itself (a white powder), you will only make yourselves look ridiculous, because we shall refuse to supply the preparation in any form other than that of the blue tablet. We know that when we first marketed this drug as a coloured preparation we did not follow the recommendations of the Commission; but we believe that by means of colour we can build up a conditioned reflex in the minds of patients and doctors whereby our tablet is favoured in prescribing for patients suffering from a common disease. This association of ideas is immensely important in the commercial world; so it must be allowed."

Though the permission now given to different manufacturers to market the same *B.P.* preparation in different colours may appear a small matter, it is quite a serious one if it means that the control of standards is no longer firmly in the hands of the commissioners. Some day a manufacturer may tell the Commission that there are so many coloured tablets that he has decided to introduce his new spasmolytic in the form of a crescent-shaped tablet because he has a special interest in the Oriental market. *B.P.* preparations of a new cardiac glycoside might be presented in heart-shaped tablets, and for a new diuretic preparation they might be reniform. These suggestions are by no means fanciful, for a manufacturer could justify his action by the kind of arguments used in favour of allowing colour.

We certainly do not suggest that standards and practices which differ from those of the *B.P.* are necessarily inferior. Further, there can be no quarrel with a manufacturer who deliberately disregards the rulings of the Commission and decides to go his own way. But having done so, he has no claim, we think, to ratification of his decisions by those whose standards are unrelated to commerce. The contribution of creative commercial enterprise to present-day medicine is very great; but its importance would not justify any weakening of the detachment with which the Pharmacopoeia Commission have performed their different kind of public service. The printing of the Royal arms on their volume is evidence of their particular responsibilities as well as of their necessary privileges.

—"The Lancet," April 5, 1958.



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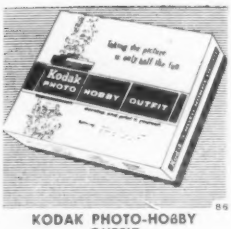

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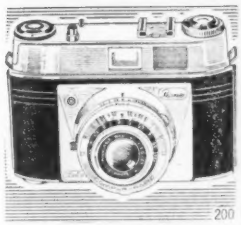

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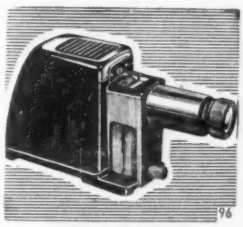

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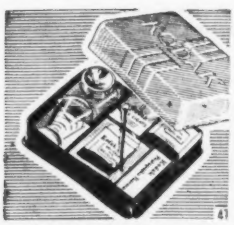

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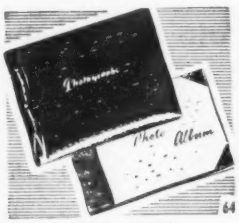

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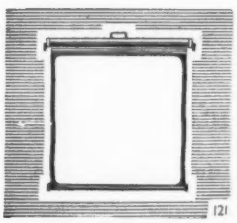

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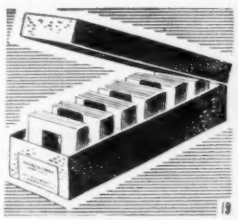

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The Adoption of the Metric System by the Royal Melbourne Hospital

By Charles B. Macgibbon, Ph.C., F.P.S. (Vic)

It is about 80 years since the medical profession and scientists suggested the use of the Metric System, but little impetus to implementing this change was given until after the end of World War 2. The support given to the use of the Metric System in medicine has been evident in the post-war publications of the British Pharmacopoeia. In 1953 the British Pharmacopoeia indicated the doses of drugs in the Metric System with the Imperial equivalents and this tendency to change has been confirmed in the B.P. 1958. The introduction to the British Pharmacopoeia 1958 states, "Doses are expressed in the Metric System only except for those substances and preparations commonly prescribed in the Imperial system. The Commission has expressed the view that arrangements should be made so that the Imperial system of dosage might be abandoned in the next edition of the Pharmacopoeia."

When, in 1956, the Editorial Committee revised the Royal Melbourne Hospital Manual, which includes the hospital pharmacopoeia, it decided that the Metric System would be adopted, as soon as possible, for use in the hospital. All doses of drugs and formulae of preparations were written in the Metric System without Imperial equivalents being indicated. It should be noted that this is the first occasion that all doses and formulae in the Imperial system were omitted from the hospital pharmacopoeia. The pharmacy staff gave their full support to this advance in prescription writing. Though in itself the metre is no better than the yard as a standard, the system based on it is much more convenient than the British system, in that, the multiples and submultiples being on the decimal system, much time is saved in reduction, and quantities are expressed as the decimal of one denomination and not in several. Again the measures of area and volume are simply related to those of length and the gram is so chosen as to be the weight of 1 cubic centimetre of water at the point of maximum density. The pharmacist prefers the Metric System for its simplicity in calculations with the decimal point displacing the fraction. Percentage solutions are accurately dispensed because of the direct relationship of the gram and the millilitre and no more does the apprentice become confused over the grain and the minim.

The British Pharmacopoeia 1958, forces the dispensing chemist to use metric measurements if he is to dispense accurately the 125 drugs for which metric doses only are given. Now that we are using milligrams and grams as measurements of weight and millilitres as a measure of volume, we are able to dispose of grains, ounces and pounds as well as minim and fluid ounce measure thereby making the duplication of two systems of weights and measures unnecessary.

It was expected that with the introduction of the Metric System to the wards in the hospital that the use, by the nursing staff, of minim and fluid ounce measures as well as the domestic household measure of teaspoonful and tablespoonful would cease. The use of millilitres as a volume measurement would mean that the nursing staff would have only one system to contend with. It would be of great advantage to the nurse, for all fluid intake and fluid output measurements would be in the same system as the individual dose for the patient. The result of this will mean that the trainee nurse will only be required to learn one system of fluid measurement. Difficulty would have been experienced in using the millilitre as a dosage measurement for out-patients so it was decided to retain the domestic measures of teaspoonful and tablespoonful for this section of the hospital.

Another reason that prompted the adoption of the Metric System was that the hospital has a responsibility as a teaching institution to instruct the students in the Metric System. It was confidently expected that as the medical students were trained in this system that they would become doctors who would universally use the Metric System in their prescription writing. Experience had shown that pharmacists were not familiar with the Metric System and that most of them used the laborious method of converting metric doses to imperial doses before dispensing the prescription. It was likewise confidently anticipated that pharmacists after a period at the hospital would gain confidence in using metric weights and measures.

Further support to the adoption of the Metric System was given by medical literature and drug manufacturers. All new products being issued have dosage expressed in the Metric System so that the relationship between drugs of similar therapeutic action is readily seen. No longer will we have drugs with similar therapeutic action expressed in different systems so that the relation of their doses cannot readily be seen. Powdered Digitalis Leaf has a maintenance dose of ½ to 1½ grains (not 30 to 90 milligrams), but Digoxin has a maintenance dose of 0.25 milligrams (not 1/240 grains) once or twice daily. It now becomes the duty of all pharmacists to embrace this system and to end the confusion of the Imperial, the Avoirdupois and Apothecaries systems. When the dispensing chemists adopts the Metric System entirely it will no longer be necessary to state on the label that the strength of the Morphine Sulphate injection is ¼ grain in 1 ml. How much more correct will it be to state that the strengh is 15 mg. in 1 ml.

Preliminary Organisation

At a conference of medical staff personnel presided over by the Medical Superintendent, the problems which would be created by the introduction of the Metric System were discussed. It was soon evident that the greatest danger was that of passive resistance, which might develop as difficulties were encountered. It was resolved to issue a Metric Conversion Table to assist staff to become familiar with the approximate Metric equivalents to the Imperial measurements. Positive action was taken by suggesting to the staff conference that everybody should be encouraged to think in the Metric System for as this was done so the necessity to convert from Metric to the Imperial system would cease.

The following decisions were endorsed:—

(1) All fluid intake and output would be measured and recorded in the Metric System.
(2) All body temperatures were to be taken and recorded in degrees Centigrade.
(3) The height of patients was to be measured and recorded in centimetres.
(4) Body weights were to be recorded in kilograms.
(5) A Metric Conversion Table of approximate equivalents was to be prepared. This table would provide a standard for use by the nursing staff and would show the equivalent Fahrenheit for a recorded Centigrade temperature, the equivalent of stones and pounds to a recorded kilogram body weight and the equivalent in feet and inches to a height recorded in centimetres.

(6) The Pharmacy was instructed to change all ward labels showing Imperial nomenclature to metric measurements.
Grain to milligram (mg.).
Ounce to Gram (G.).
Minim to millilitre (ml.).
Fluid ounce to millilitre (ml.).
One teaspoonful to 4 millilitres (4 ml.).
Two teaspoonfuls to 8 millilitres (8 ml.).
One tablespoonful to 15 millilitres (15 ml.).

(7) The resident medical staff were to be instructed to use the Metric System.

(8) The co-operation of the honorary medical staff was to be sought and they were to be asked to change their prescribing to the Metric System.

(9) The date for the change over would be midnight of April 30, so that all hospital records from the 1st May, 1958, would be in Metric System.

The Provision of Equipment

(1) **Fluid Intake:** Clear plastic jugs shaped with a pourer lip and graduated in millilitres were provided.
Fluid Output: Opaque plastic jugs graduated in millilitres, and of a different shape to those used for fluid intake, were provided.
Stainless Steel Jugs that were in use and graduated in fluid ounces and pints and cubic centimetres were remarked in millilitres and litres.
All this equipment was delivered prior to April 30, and on May 1 all Imperial measures were withdrawn.

(2) Centigrade thermometers were issued to wards and Fahrenheit thermometers were withdrawn.

(3) The height register graduated in the Imperial system was retained, but a brass rod graduated in centimetres was affixed to the present measuring gauge.

(4) It was not possible, except at great cost, to convert the present patient weighing scales to the Metric System so the nursing staff were instructed to weigh on the present scale, convert the avoirdupois weight to the Metric equivalent and record the weight in the Metric System.

(5) Tables showing approximate equivalents were printed on both the front and reverse sides of a folded card. The various tables showed:—

(a) The equivalent Fahrenheit temperatures to Centigrade. The range of temperatures were from 35.0 deg. C. to 45.0 deg. C.

(b) The equivalent kilogram weight for stones and pounds. The range of weights commenced at 31.7 kg. (5 stone) and went through to 88.6 kg. (14 stone). Any weight greater than this could be calculated from the table.

(c) A measurement of length commencing at 91.4 centimetres (3 feet) and ranged to 182.9 centimetres (6 feet).

(d) Approximate equivalents of fluid ounces and millilitres, also minims and millilitres.

(e) Approximate equivalents of ounces/grains (Avoidupois) to grams/milligrams.

(f) A Table of Metric Weights and Volumes.

(g) Approximate equivalents for dispensing purposes related to the domestic measures of teaspoonful and tablespoonful.

(h) A percentage dilution table.

A copy of the tables is given in Appendix A at the end of this article.

Relabelling of Pharmacy Stock

It may be of interest to hospital pharmacists to learn of the method by which pharmacy stock labelled in the Imperial system was changed overnight to the Metric System. Much preliminary organisation had been done prior to the change-over on May 1. Labels with doses of ingredients in the Imperial system were withdrawn and new labels showing all doses of ingredients in Metric were obtained. As new stock for wards and departments was packed the Metric labels were attached. For a short period prior to May 1, 1958, it was necessary to use the domestic measure of one teaspoonful or one tablespoonful on the label and the metric dose of 4 millilitres or 15 millilitres was blocked out.

On the evening of April 30, commencing at 7 p.m., qualified pharmacists assisted by apprentices, under the direction of the Chief Pharmacist, visited the departments and wards throughout the hospital. The drug cupboards in each department and ward were inspected and any drugs labelled in the Imperial system had the labels changed to the Metric System. Uniformity in equivalent doses was assured by the use of the R.M.H. Metric Conversion Table, Approximate Equivalents. The task was completed by 9.30 p.m. The hospital was thus assured of correct metric equivalents, no wastage of stock, no interruption in the drug treatment of patients and no inconvenience to the nursing staff.

The ease of implementation of the Metric System amazed all. The medical and nursing staff co-operated with the pharmacy staff and the change-over was effected without disturbance or irritation. In the change-over period from the Imperial to the Metric System compromises were permitted, but this period must be limited. All the Imperial system methods and measures must be abolished. The pharmacist must no longer dispense his prescriptions by converting the Metric measurements to Imperial equivalents and he will dispose of his Imperial weights and measures. The Royal Melbourne Hospital Metric Conversion Table of Approximate Equivalents will not be reprinted as it was intended only as a means of helping the staff to relate the Imperial and Metric Systems of measurements.

The Metric System has now been in operation for 5 months and is regarded as the normal measuring system. It is hoped that the Metric System will be adopted by other hospitals, doctors and pharmacists generally. It is confidently anticipated that doctors, nurses and pharmacists trained at the Royal Melbourne Hospital will go out into the world and change all prescribing to the Metric System. All our efforts will be in vain if the Metric System remains unused by the general practitioner and the family chemist. We look hopefully for its universal adoption so that medicine and pharmacy will be able to realise the real advantages of this system.

We at the Royal Melbourne Hospital have welcomed the adoption of the Metric System, and now that we have learnt to think in this system we are realising its many advantages over the out-moded Imperial system.

Our appeal now is to the dispensing chemist to follow the lead given by this hospital and in every way endeavour to encourage the use of the Metric System in dispensing.

Face of Card—Column 1

THE ROYAL MELBOURNE HOSPITAL
METRIC CONVERSION
TABLES
(Approximate Equivalents Only)

Column 2

FOR INFORMATION ONLY

TABLE OF METRIC WEIGHTS AND VOLUMES

1000 micrograms in 1 milligram (mg.)
1000 milligrams in 1 Gram (G.).
1000 Grams in 1 Kilogram (kg.).
1 cubic centimetre (c.c.) is equal to 1 millilitre (ml.).
1000 millilitres in 1 litre (L.).

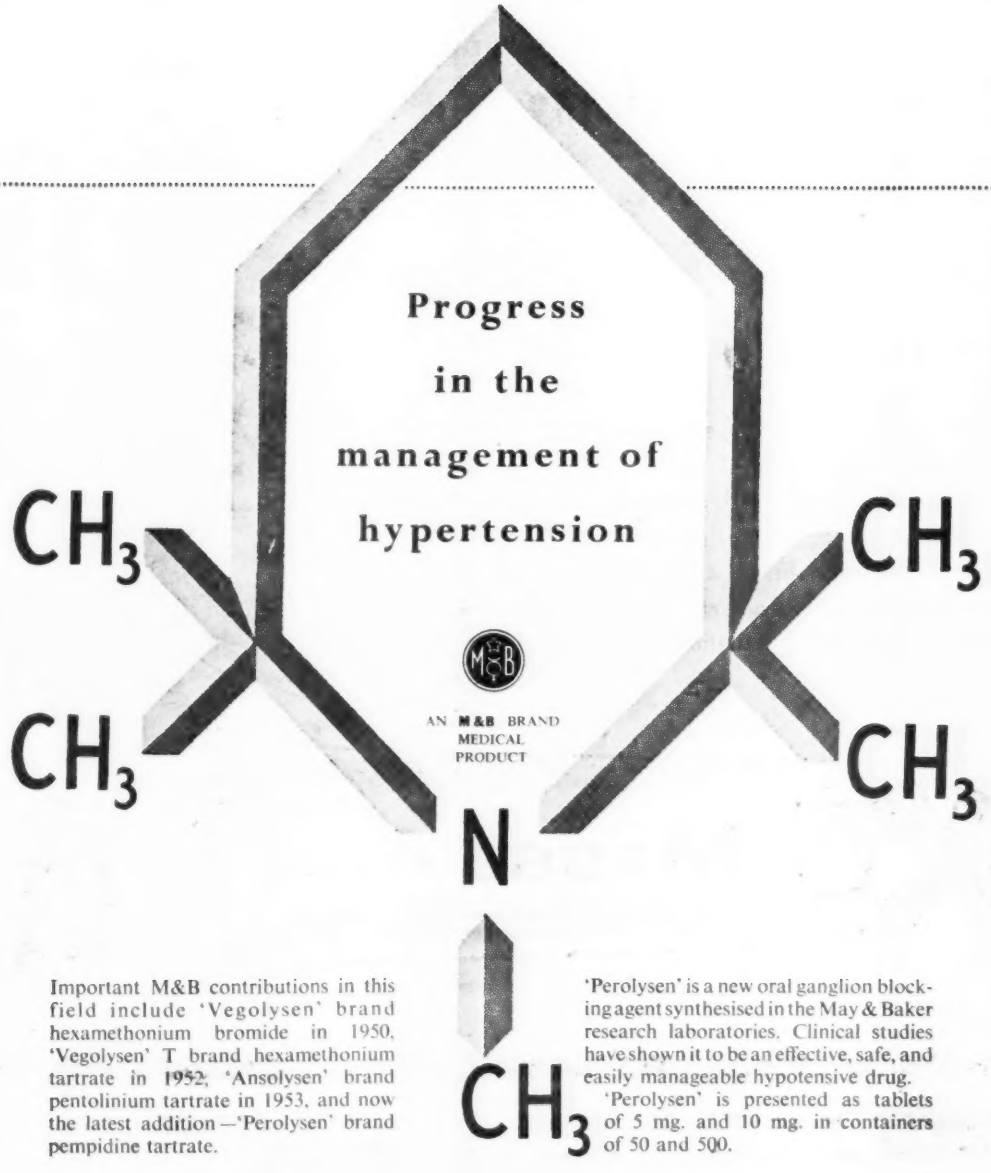
APPROXIMATE EQUIVALENTS FOR DISPENSING PURPOSES

DOMESTIC MEASURES:

One teaspoonful	4 ml.
Two teaspoonfuls	8 ml.
One tablespoonful	15 ml.
Two tablespoonfuls	30 ml.

DILUTION TABLE:

1% 10 ml. diluted to 1000 ml. (1 in 100)
0.5% 5 ml. diluted to 1000 ml. (1 in 200)
0.1% 1 ml. diluted to 1000 ml. (1 in 1000)
0.05% 0.5 ml. diluted to 1000 ml. (1 in 2000)
0.02% 0.2 ml. diluted to 100 ml. (1 in 5000)
0.01% 0.1 ml. diluted to 1000 ml. (1 in 10,000)



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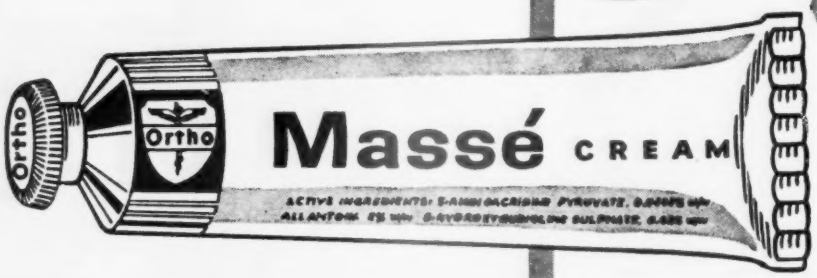

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Column 3—(Front of Card)

Approximate Equivalents of Fluid Ounces and Millilitres.

Fluid Ounces	Millilitres
½ fl. oz.	15 ml.
1 fl. oz.	30 ml.
2 fl. oz.	60 ml.
3½ fl. oz.	100 ml.
4 fl. oz.	120 ml.
5 fl. oz.	150 ml.
6⅔ fl. oz.	200 ml.
10 fl. oz.	300 ml.
13⅓ fl. oz.	400 ml.
17½ fl. oz.	500 ml.
20 fl. oz.	600 ml.

Record in ml.

Minims	Millilitres
1 minim	0.06 ml.
1½ minims	0.1 ml.
3 minims	0.2 ml.
5 minims	0.3 ml.
6 minims	0.4 ml.
8 minims	0.5 ml.
10 minims	0.6 ml.
12 minims	0.8 ml.
15 minims	1 ml.
20 minims	1.3 ml.
30 minims	2 ml.
45 minims	3 ml.
60 minims	4 ml.
75 minims	5 ml.
90 minims	6 ml.
120 minims	8 ml.
150 minims	10 ml.

Record in ml.

Approximate Equivalents of Ounces/Grains (Avoirdupois to Grams/Milligrams.

Ounces (Avoirdupois)	Grams
1 oz.	30 G.
4 oz.	120 G.
16 oz.	450 G.
Grains	**Milligrams**
1/600 gr.	0.1 mg.
1/300 gr.	0.2 mg.
1/200 gr.	0.3 mg.
1/160 gr.	0.4 mg.
1/120 gr.	0.5 mg.
1/100 gr.	0.6 mg.
1/80 gr.	0.8 mg.
1/50 gr.	1.2 mg.
1/30 gr.	2 mg.
1/20 gr.	3 mg.
1/10 gr.	6 mg.
1/8 gr.	8 mg.
1/6 gr.	10 mg.
1/4 gr.	16 mg.
1/3 gr.	20 mg.
1/2 gr.	30 mg.
3/4 gr.	50 mg.
1 grain	60 mg.
1¼ grains	75 mg.
1½ grains	100 mg.
2 grains	120 mg.

Record in mg.

Grains	Grams
3 grains	0.2 G.
5 grains	0.3 G.
6 grains	0.4 G.
8 grains	0.5 G.
10 grains	0.6 G.
15 grains	1 G.
20 grains	1.3 G.
30 grains	2 G.
45 grains	3 G.
60 grains	4 G.
75 grains	5 G.
90 grains	6 G.
120 grains	8 G.

Record in G.

Column 4—(Back of Card)

Conversion of Centigrade to Fahrenheit

35.0°C	95.0°F	40.2°C	104.4°F
35.2°C	95.4°F	40.4°C	104.7°F
35.4°C	95.7°F	40.6°C	105.1°F
35.6°C	96.1°F	40.8°C	105.4°F.
35.8°C	96.4°F	41.0°C	105.8°F
36.0°C	96.8°F	41.2°C	106.2°F
36.2°C	97.2°F	41.4°C	106.5°F
36.4°C	97.5°F	41.6°C	106.9°F
36.6°C	97.9°F	41.8°C	107.2°F
36.8°C	98.2°F	42.0°C	107.6°F
37.0°C	98.6°F	42.2°C	108.0°F
37.2°C	99.0°F	42.4°C	108.3°F
37.4°C	99.3°F	42.6°C	108.7°F
37.6°C	99.7°F	42.8°C	109.0°F
37.8°C	100.0°F	43.0°C	109.4°F
38.0°C	100.4°F	43.2°C	109.8°F
38.2°C	100.8°F	43.4°C	110.1°F
38.4°C	101.1°F	43.6°C	110.5°F
38.6°C	101.5°F	43.8°C	110.8°F
38.8°C	101.8°F	44.0°C	111.2°F
39.0°C	102.2°F	44.2°C	111.6°F
39.2°C	102.6°F	44.4°C	111.9°F
39.4°C	102.9°F	44.6°C	112.3°F
39.6°C	103.3°F	44.8°C	112.6°F
39.8°C	103.6°F	45.0°C	113.0°F
40.0°C	104.0°F		

Record in °C.

USEFUL INFORMATION

Freezing	0°C	32°F
Cold	7°C	45°F
Cool	19°C	66°F
Temperate	26°C	79°F
Tepid	30°C	86°F
Warm	37°C	99°F
Hot	40°C	104°F
Hot water from tap	68°C	154°F
Boiling water	100°C	212°F

Column 5—(Back of Card)

CONVERSION OF STONES AND POUNDS TO KILOGRAMS (kg.)

5 st.	0 lb.	31.7 kg.	8 st.	2 lb.	51.7 kg.
5 st.	1 lb.	32.1 kg.	8 st.	4 lb.	52.6 kg.
5 st.	2 lb.	32.6 kg.	8 st.	6 lb.	53.5 kg.
5 st.	3 lb.	33.0 kg.	8 st.	8 lb.	54.4 kg.
5 st.	4 lb.	33.5 kg.	8 st.	10 lb.	55.3 kg.
5 st.	5 lb.	34.0 kg.	8 st.	12 lb.	56.2 kg.
5 st.	6 lb.	34.4 kg.	9 st.	0 lb.	57.1 kg.
5 st.	7 lb.	34.8 kg.	9 st.	2 lb.	58.0 kg.
5 st.	8 lb.	35.3 kg.	9 st.	4 lb.	58.9 kg.
5 st.	9 lb.	35.8 kg.	9 st.	6 lb.	59.8 kg.
5 st.	10 lb.	36.3 kg.	9 st.	8 lb.	60.7 kg.
5 st.	11 lb.	36.7 kg.	9 st.	10 lb.	61.6 kg.
5 st.	12 lb.	37.3 kg.	9 st.	12 lb.	62.5 kg.
5 st.	13 lb.	37.6 kg.	10 st.	0 lb.	63.4 kg.
6 st.	0 lb.	38.1 kg.	10 st.	2 lb.	64.3 kg.
6 st.	1 lb.	38.5 kg.	10 st.	4 lb.	65.2 kg.
6 st.	2 lb.	39.0 kg.	10 st.	6 lb.	66.1 kg.
6 st.	3 lb.	39.4 kg.	10 st.	8 lb.	67.0 kg.
6 st.	4 lb.	39.9 kg.	10 st.	10 lb.	67.9 kg.
6 st.	5 lb.	40.3 kg.	10 st.	12 lb.	68.8 kg.
6 st.	6 lb.	40.8 kg.	11 st.	0 lb.	69.7 kg.
6 st.	7 lb.	41.2 kg.	11 st.	2 lb.	70.6 kg.
6 st.	8 lb.	41.7 kg.	11 st.	4 lb.	71.5 kg.
6 st.	9 lb.	42.2 kg.	11 st.	6 lb.	72.4 kg.
6 st.	10 lb.	42.6 kg.	11 st.	8 lb.	73.3 kg.
6 st.	11 lb.	43.0 kg.	11 st.	10 lb.	74.2 kg.
6 st.	12 lb.	43.5 kg.	11 st.	12 lb.	75.1 kg.
6 st.	13 lb.	44.0 kg.	12 st.	0 lb.	76.0 kg.
7 st.	0 lb.	44.5 kg.	12 st.	2 lb.	76.9 kg.
7 st.	1 lb.	44.9 kg.	12 st.	4 lb.	77.8 kg.
7 st.	2 lb.	45.3 kg.	12 st.	6 lb.	78.7 kg.
7 st.	3 lb.	45.7 kg.	12 st.	8 lb.	79.6 kg.
7 st.	4 lb.	46.2 kg.	12 st.	10 lb.	80.5 kg.
7 st.	5 lb.	46.7 kg.	12 st.	12 lb.	81.4 kg.
7 st.	6 lb.	47.1 kg.	13 st.	0 lb.	82.3 kg.
7 st.	7 lb.	47.6 kg.	13 st.	2 lb.	83.2 kg.
7 st.	8 lb.	48.0 kg.	13 st.	4 lb.	84.1 kg.
7 st.	9 lb.	48.5 kg.	13 st.	6 lb.	85.0 kg.
7 st.	10 lb.	49.0 kg.	13 st.	8 lb.	85.9 kg.
7 st.	11 lb.	49.4 kg.	13 st.	10 lb.	86.8 kg.
7 st.	12 lb.	49.8 kg.	13 st.	12 lb.	87.7 kg.
7 st.	13 lb.	50.3 kg.	14 st.	0 lb.	88.6 kg.
8 st.	0 lb.	50.8 kg.			

¼ lb. equals 0.11 kg. ½ lb. equals 0.23 kg.
¾ lb. equals 0.34 kg. 1 lb. equals 0.45 kg.

Record in kg.

Column 6—(Back of Card)

CONVERSION OF FEET AND INCHES TO CENTIMETRES (cm.)

3 ft.	0 in.	91.4 cm.	4 ft.	7 in.	139.7 cm.
3 ft.	1 in.	94.0 cm.	4 ft.	8 in.	142.2 cm.
3 ft.	2 in.	96.5 cm.	4 ft.	9 in.	144.8 cm.
3 ft.	3 in.	99.1 cm.	4 ft.	10 in.	147.3 cm.
3 ft.	4 in.	101.6 cm.	4 ft.	11 in.	149.9 cm.
3 ft.	5 in.	104.1 cm.	5 ft.	0 in.	152.4 cm.
3 ft.	6 in.	106.7 cm.	5 ft.	1 in.	154.9 cm.
3 ft.	7 in.	109.2 cm.	5 ft.	2 in.	157.5 cm.
3 ft.	8 in.	111.8 cm.	5 ft.	3 in.	160.0 cm.
3 ft.	9 in.	114.3 cm.	5 ft.	4 in.	162.6 cm.
3 ft.	10 in.	116.8 cm.	5 ft.	5 in.	165.1 cm.
3 ft.	11 in.	119.4 cm.	5 ft.	6 in.	167.6 cm.
4 ft.	0 in.	121.9 cm.	5 ft.	7 in.	170.2 cm.
4 ft.	1 in.	124.5 cm.	5 ft.	8 in.	172.7 cm.
4 ft.	2 in.	127.0 cm.	5 ft.	9 in.	175.3 cm.
4 ft.	3 in.	129.5 cm.	5 ft.	10 in.	177.8 cm.
4 ft.	4 in.	132.1 cm.	5 ft.	11 in.	180.3 cm.
4 ft.	5 in.	134.6 cm.	6 ft.	0 in.	182.9 cm.
4 ft.	6 in.	137.2 cm.			

1 inch equals 2.54 centimetres

Record in cm.

Size of card: 24 centimetres x 14 centimetres, which is folded in 3 so that each fold measures 8 centimetres x 14 centimetres.

[We are indebted to Mr. Macgibbon for the foregoing article, which is also the subject of a guest editorial by Dr. P. N. O'Donnell, of the Royal Melbourne Hospital. Comments are invited.—Ed.]

The Pharmacology of the B.P., 1958

Lecture Delivered by Dr. G. Bentley on August 13, 1958, Before Members of the Pharmaceutical Society of Victoria

The pharmacology of the B.P., 1958, covers so vast a field that it is obvious that only a small aspect can be discussed in one lecture. I have therefore interpreted the title freely, and have chosen the subject of drug interaction as the framework for this talk, with illustrations drawn from the B.P.

But first, it seems advisable to define a few terms. By drug interaction I mean the study of the way in which a compound may potentiate, diminish, block, or even reverse the effects of another subsequently administered drug. The term "pharmacology," too, requires definition, because I find that many people expect a pharmacologist to dispense medicine, an art for which he has neither the skill nor the training. Therefore, I make a practice of describing myself, not as a pharmacologist, but as a mixed-up biologist. This term is true in at least two senses: firstly, because the vast volume of literature in this field confuses most of us; and secondly, because pharmacology is indeed a mixed-up science. It falls uneasily between the stools of physiology and biochemistry, clutching from time to time at such diverse disciplines as electrophysics and zoology. It abutts firmly into the field of pharmacy, too, especially with regard to problems of drug assay. Therefore, any definition of pharmacology is likely to be influenced by one's background and major interests. For me, however, the central and characteristic features of pharmacology may best be illustrated by three questions, which in most cases can as yet be but partly answered. The attempts to provide the answers keep many workers fully occupied. These characteristic questions are:

(i) If we know what a drug does to a living animal, or even to isolated tissue preparations from such an animal, then what knowledge can be drawn from physiology and biochemistry to explain these effects? In other words, what systems in the body does the drug interfere with?

(ii) By a study of the formula of the drug in question, is it possible to decide what features of the structure confer its unique properties?

The third question is a million-dollar corollary to the second, i.e.,

(iii) Can we construct other related molecules with similar desirable pharmacological properties?

It is paradoxical, perhaps, that the drug which is central to my talk this evening does not appear in the B.P., 1958, although it plays a most vital role in animal physiology. This is the hormone acetyl choline, and before we discuss how its action may be modified, let us review briefly what we know of its history and actions in the body. It was first synthesised in 1867, long before its biological role was suspected. (This reminds one of the case of nicotinic acid.) Furthermore, the first demonstration of its natural origin was its discovery in plant material (ergot) in 1914. It was not until its pharmacology was well defined that the idea arose that it might play so vital a role in animal affairs. Finally, in 1921, Otto Loewi demonstrated conclusively that the substance liberated by stimulation of the vagus nerve was in fact acetyl choline. Since then, its presence has been shown in many tissues, and a vast volume of literature dealing with its action has rapidly accumulated. It has been shown that it acts at the following sites:—

(i) It is liberated at the terminals of the voluntary nervous system (motor end plates), and diffusing across to the muscle fibre, causes it to contract.

(ii) It occurs similarly at the nerve terminals of the para-sympathetic system, and its liberation following stimulation of this system causes such diverse effects as slowing of the heart, secretion of saliva and peptic juice, contraction of the intestine, and relaxation of blood vessels.

(iii) In all autonomic ganglia, both sympathetic and parasympathetic, it is liberated from the terminals of the preganglionic fibres, and causes stimulation of the post-ganglionic fibres.

(vi) It occurs in the central nervous system (both brain and spinal cord), and is probably concerned with the conduction of at least some impulses within these organs.

(v) It is essential for ciliary action, and other claims have been made that its presence is essential for many cell membranes to function properly.

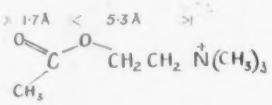
(vi) Another claim, less well substantiated, suggests that it may be involved in the conduction of impulses along nerve fibres.

(vii) It also appears to be intimately involved in the processes concerned with the heart's beat.

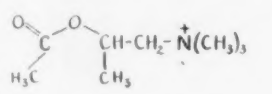
Therefore it is obvious that acetyl choline is a most important substance, and without it, neither voluntary muscle movement nor the autonomic control of organ function, nor indeed any form of nervous activity, would be possible. And not only is acetyl choline very versatile in its actions, but it produces these effects at extraordinarily low doses—effects may be seen sometimes with only a few molecules.

We have some knowledge of how acetyl choline produces its effects on nerve and muscle cells. When it impinges on a sensitive area, such as the motor end plate, it appears to be adsorbed on to specific receptor sites, and this initiates a very rapid change, or depolarisation, in the electrical charge which exists at the surface of all healthy cells. This depolarisation appears to act as a trigger for the more complex biochemical changes which are involved in muscle contraction or nervous conduction.

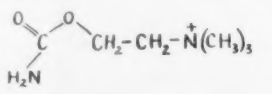
This adsorption of acetyl choline on to the receptors is a very specific phenomenon, and is a function of the shape and size of the drug molecule. There are several other compounds which produce similar effects, and



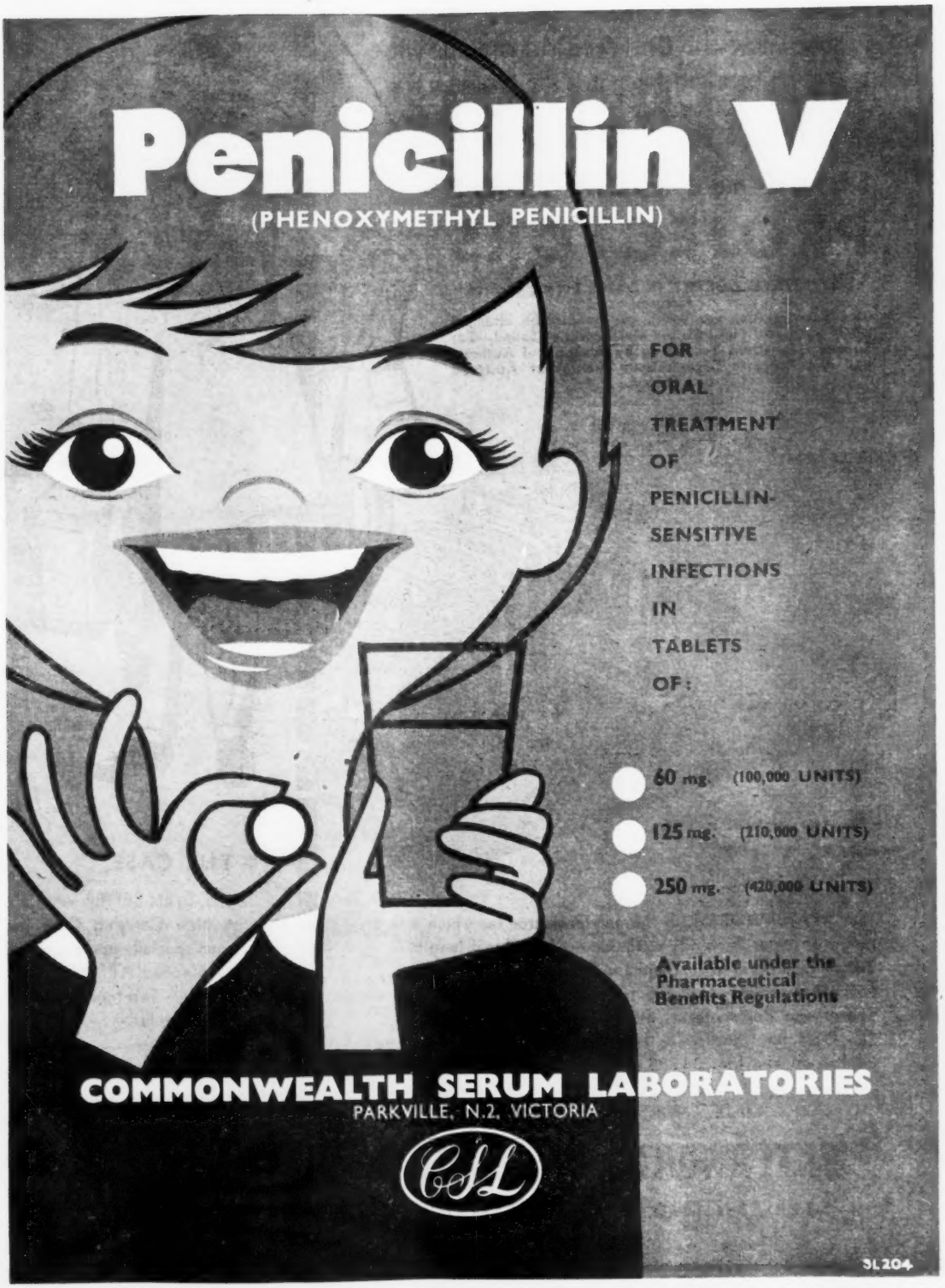
acetyl choline



acetyl β methyl choline



carbaminoyl choline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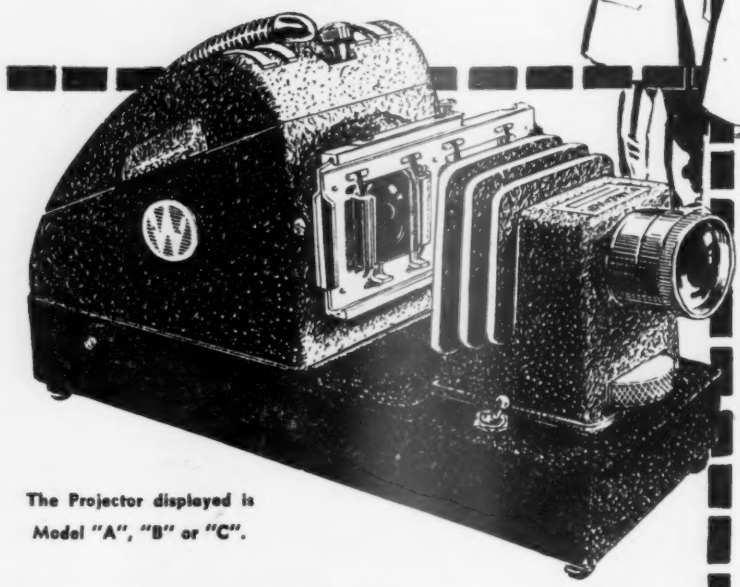

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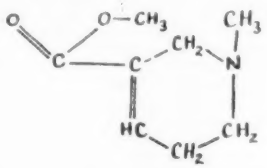
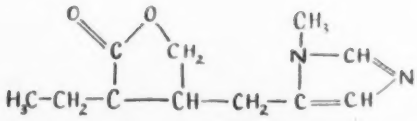
usually, this is because they have some points of resemblance with the acetyl choline molecule. It is as though the receptor "mistakes" these compounds for the natural activator. Some acetyl choline-like drugs are acetyl β-methyl choline (Methacholine) and carbaminoyl choline (Carbachol). The structural affinities are illustrated in the formulae below.

I suggest that these formulae, and the ones to follow, be used in the way a map is used—not to be taken in as a whole, but simply to illustrate the salient features of the structure, and the distances between these.

Two other drugs may be mentioned in this context. These are the alkaloids arecoline and pilocarpine, and at first glance, any chemical resemblance to acetyl choline seems improbable. However, when the formulae are written out one under the other, it can be seen that both drugs possess basic and ester groupings at approximately the same distance from each other as occurs in acetyl choline—



arecoline

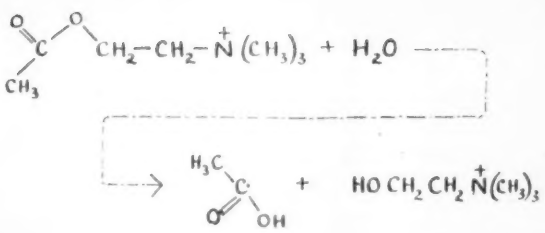


pilocarpine

Clinically, these drugs are used for a variety of purposes, where there appears to be a deficiency of cholinergic activity. For instance, they may be given to increase the activity of the intestine which has become flaccid after an abdominal operation, or to assist in the emptying of an atonic urinary bladder, which may result from diverse effects such as drug therapy or traumatic shock.

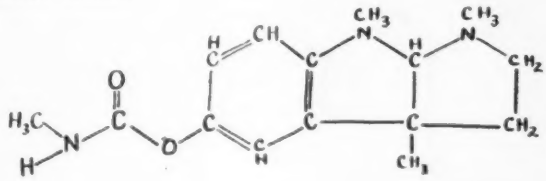
After acetyl choline has produced its effects on nerve or muscle cells, it is important that it be removed rapidly, so that the cell it has stimulated may recover and "reload" for the next stimulus. Furthermore, because acetyl choline is so outstandingly potent and versatile, it is obviously important that it is not permitted to go blundering about the body, producing unwanted effects at distant sites. This is in contrast to the sympathetic hormone adrenaline and noradrenaline which characteristically produce many of their effects at a distance from their point of synthesis. Acetyl choline is confined to its sites of action by means of a very efficient and widespread group of enzymes called collectively cholinesterase. Now, acetyl choline is made in the body by combining acetic acid with the basic alcohol choline. Pharmacologically speaking, acetic acid is completely inert, and while choline has many of the actions of its acetic ester, it is less active by a factor of about one hundred thousand. So, by the simple expedient of hydrolysing it, the very active drug is rendered inert.

So, the steps leading to the proper and rhythmic activity of nerve and muscle cells involve firstly, adsorption of proper amounts of acetyl choline on to the receptor surfaces, which are so constructed as to fit closely to this molecule. Following the depolarisation that this adsorption causes, and the subsequent activation or stimulation of the cell, the acetyl choline is rapily hydrolysed, and released from the receptor surface, which then "reloads," i.e., repolarises, to be ready for

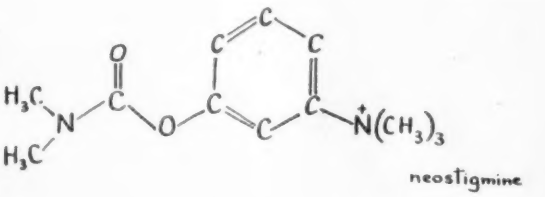


acetic acid choline

the arrival of the next stimulus. Therefore, one can see that anything which interferes with any aspect of acetyl choline's metabolism will have severe effects on the organism, and this is true of drugs which delay its removal. As is the case with the acetyl choline receptors, the active centres of cholinesterase are designed to fit closely and exactly to the acetyl choline molecule. Therefore, it is not surprising that the enzyme, like the receptor, will accept other compounds having some similarity to its natural substrate. Some of these compounds, such as Methacholine or Carbachol, it can hydrolyse, although at a very much slower rate than it handles the natural compound. This slowed hydrolysis explains why these two drugs have a more prolonged action than does acetyl choline. However, some other drugs are "accepted" by the enzyme, and once adsorbed to its surface, they appear to "jam" these, and are desorbed or released very slowly or not at all The consequence of this is that the enzyme cannot handle its proper substrate, and so this accumulates. The toxic effects of acetyl choline overdosage then appear. Two of the many drugs with this action are the alkaloid eserine, and the synthetic compound neostigmine. The formulae of these illustrate again points of similarity with acetyl choline.

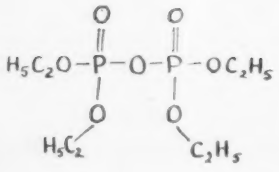


eserine

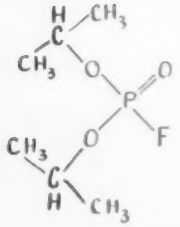


neostigmine

Again we see the basic nitrogen group and, a little more distant than in the case of acetyl choline (i.e., about 7.0A°) an ester linkage. However, if enough acetyl choline is present, it may compete with the inhibitors for the enzyme, and in time, the inhibitors will be displaced and excreted. Another very important class of cholinsterase inhibitors act in a quite different way. These are found amongst organic esters of phosphoric acid, and they appear to combine slowly and irreversibly with some other groups on the enzyme, and destroy its function permanently. The formulae of these compounds show no similiarities whatsoever to acetyl choline, and it cannot compete with them for the enzyme, or displace them from combination with the enzyme.



Tetraethyl pyrophosphate

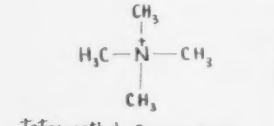


D.F.P.

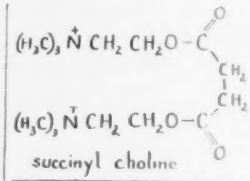
One of these compounds, D.F.P., started life as a deadly war gas, but in times of peace it has redeemed its character, and has been used clinically for instance in cases of myasthenia gravis. This is a fortunately rare disease characterised by progressive muscular weakness which may lead to complete paralysis and death. This weakness is due to a diminished synthesis of acetyl choline by the voluntary nerves, so that less and less is available to cause muscular contraction in response to the nerve impulse. By partially inhibiting the body's cholinesterase, the diminished supply of acetyl choline is protected, and an increased muscular strength results. Other members of this family of drugs find wide application as insecticides, as even the lowly housefly, and the parasitic mites and ticks cannot survive without a functional cholinesterase system.

So, to summarise this section, we may say that there are two ways of mimicking the effects of acetyl choline in the body. The first is to administer a drug which acts similarly, but is removed more slowly, and the second is to inhibit the governing action of cholinesterase, and allow the endogenous acetyl choline to accumulate.

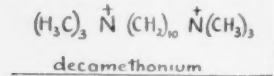
The effects we have discussed so far will be seen mainly at the periphery of the nervous system, that is to say, at the terminals of the voluntary nervous system, and the attached voluntary muscles, and on those organs governed by the autonomic nervous system. When we come to discuss drugs which diminish the effects of acetyl choline, a little more specificity is shown as to the site most affected, although this specificity is a quantitative phenomenon rather than one of quality. As a general rule, as one might expect, a drug which affects one aspect of acetyl choline action will affect most of its actions if a high enough dose is given. The question which still remains unanswered is why one cholinergic system in the body is more readily affected than another. In some cases, this may simply be due to the inability of the drug to penetrate to the site of action, and this appears to be the case within the brain. In particular, strongly charged drugs cannot cross the blood-brain barrier and enter the brain, and so their effects are usually seen only at the periphery. Such is the case with some of the paralysing drugs, such as curare, which are now so frequently used in anaesthesia. Most curareform drugs characteristically have two quaternary nitrogen atoms, usually distant about ten carbon atoms from each other. The suggestion has been proposed that such drugs are adsorbed simultaneously on to two acetyl choline receptors and are firmly held there, blocking the approach of acetyl choline. However, this is not the whole story because there are some drugs with paralysing actions having but one nitrogen atom. Even so simple a molecule as tetramethyl ammonium in high doses may cause paralysis. A glance at the formulae will illustrate their salient features.



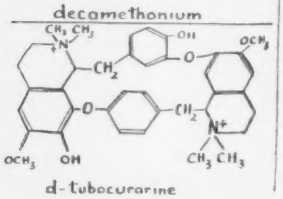
Tetramethyl ammonium



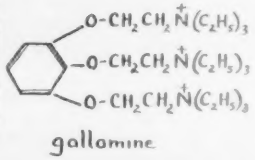
succinyl choline



decamethonium



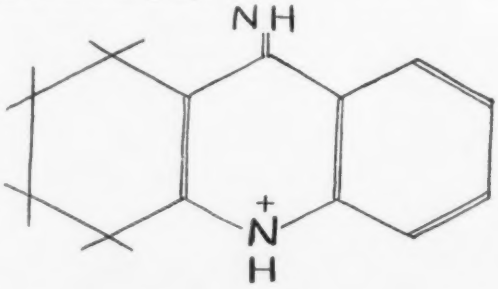
d-tubocurarine



gallamine

Succinyl choline is interesting because it produces a very brief paralysis. The brevity of action is due to the fact that cholinesterase is able to hydrolyse this drug fairly rapidly. However, tubocurarine and gallamine are not hydrolysed, and produce a prolonged paralysis. Recovery from these drugs occurs in a manner similar to the recovery of cholinesterase from inhibition by eserine. Naturally formed acetyl choline competes with the drug for the receptor sites, and it is gradually displaced and excreted. Procedures which increase the concentration of acetyl choline at the motor end plate region will hasten this displacement, and that is why anticholinesterase drugs are used as decurarising agents against gallamine and d-tubocurarine. However, anticholinesterase drugs may not be used against succinyl choline, because hydrolysis of this drug by cholinesterase is one of the means by which it is removed.

You may be interested to hear that a drug developed and studied in the Pharmacology School of this University has recently been introduced into medicine as a decurarising agent. This is the compound tetrahydro 5 amino acridine, a close relative of the antibacterial drug, Aminacrin. It is claimed that the tetrahydro 5 amino acridine is safer, and has fewer side effects, than the more usual anticholinesterases. The formula of this new drug, however, is not very similar to the anticholinesterases I have mentioned, because, while it possesses a strongly basic nitrogen group, it does not have an ester group.



1,2,3,4 tetrahydro 5 amino acridine

Nevertheless, it is a very patent inhibitor of cholinesterase.

Tubocurarine acts not only at the motor end plate, but also paralyses autonomic ganglia. However, there are various other drugs whose action against ganglionic transmission is more specific. The structures of such drugs vary widely, and it is very difficult to see any clear-cut structure-activity relationship. The simplest ganglionic blocking agent is tetra ethyl ammonium, and this compound has been used clinically to lower blood pressure in cases of neurogenic hypertension. However, the better known ganglionic blocking agents are found amongst compounds containing two trimethyl ammonium groups at a distance of five or six carbon atoms from each other.

Hexamethonium is one such example, and has been

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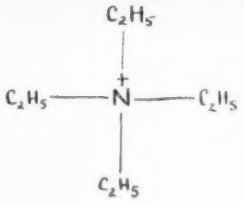
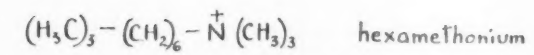
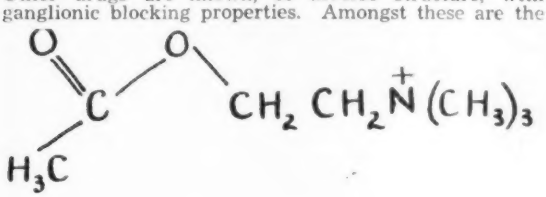


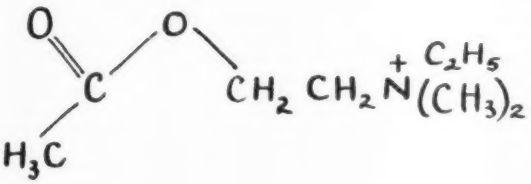
tetraethyl ammonium

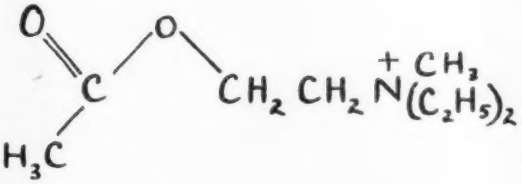


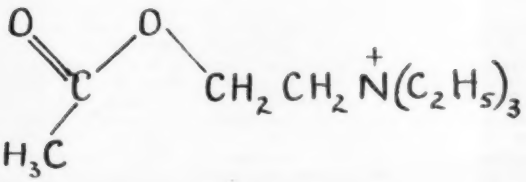
hexamethonium

used widely to lower high blood pressure. The related drug decamethonium has its two trimethylammonium groups separated by ten carbon atoms, and while it has some action on ganglia, it is best known for its curare-like effects. A paradox exists, however, in that in the series of bis triethyl ammonium compounds, lowest ganglion blocking activity is found in those compounds where the basic groups are separated by five or six carbon atoms, but with bis diethyl ammonium decane (corresponding to decamethonium) high activity appears. Other drugs are known, of diverse structure, with ganglionic blocking properties. Amongst these are the









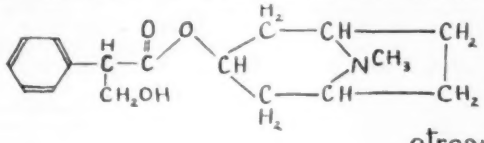
alkaloids, nicotine and lobeline. Their effects are characteristically a primary stimulation followed by a depression.

Another quite interesting finding in this field came from a study of simple derivatives of acetyl choline. It was found that if one of the methyl groups on the quaternary nitrogen was replaced by an ethyl group, the actions of the resulting drug were a little weaker than those of acetyl choline, but otherwise it was identical. With two ethyl groups, however, the compound became almost inactive, and with three, strong ganglionic blocking properties appeared.

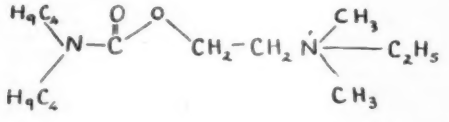
While tubocurarine has a moderate blocking action on ganglia, its effects at the periphery of the parasympathetic system are relatively much weaker. And conversely, the ability of those drugs which are highly active in blocking parasympathetic effects are quite inactive at the neuro-muscular junction, although some of them may block autonomic ganglia. This is a fortunate accident of pharmacology, for it permits the treatment of the symptoms of gastric ulcer without paralysing the unfortunate sufferer at the same time.

Probably the best known drug with parasympatholytic properties is the alkaloid atropine, and in fact, this type of activity is usually known at atropine-like. There are many drugs having this property, and once again it is often possible to detect chemical resemblances to acetyl choline. Listed below are the formulae of atropine, and three synthetic drugs, dibutoline, syntropan and propantholine.

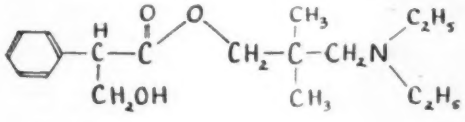
It will be noted that again there is a similar spatial arrangement of the basic and the ester groups as in



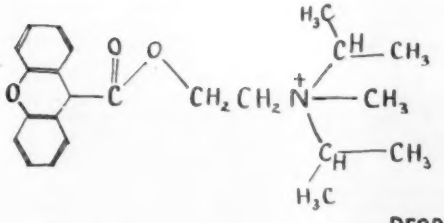
atropine



dibutoline



syntropan



propantheline

acetyl choline. But with the atropine-like drugs larger groups than the acetyl radicle are combined with the alcohol, and the alcohol itself has larger substituents than occur in choline. It is as though the active centres are buried in amongst big, blanketing groups.

However, once again there are many drugs with atropine-like action which bear very little or no resemblance at all to acetyl choline, and as yet, we are unable to explain their action in terms of chemistry. Other uses for these parasympatholytic drugs include the reduction of spasms of smooth muscle, such as occur in intestinal or biliary colic. Those of you who have had a general anaesthetic will remember the premedication with a parasympatholytic drug given with the aim of drying up the secretions of the bronchial tract.

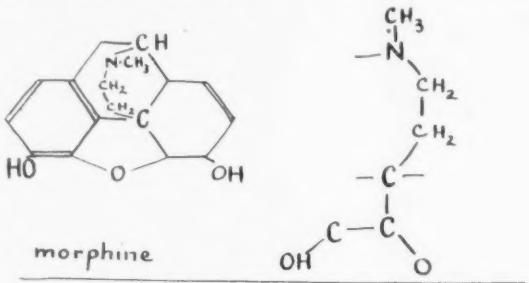
So far we have dealt only with the peripheral effects of drugs which interact with acetyl choline. I have deliberately avoided discussing the structure-activity relationships of drugs which do act within the central nervous system, because of the forbidding complexity of this system, and the large gaps in our knowledge of its physiology. However, I would like to discuss briefly a few of the more dramatic effects of cholinergic interaction within the brain.

The case of the central actions of hyoscine and atropine illustrate one facet of this complexity. It is assumed, possibly with inadequate justification, that these actions involve some degree of interference with the central actions of acetyl choline. But, while high doses of atropine cause excitation and delerium, hyoscine usually produce sedation. Furthermore, the effects of acetyl choline itself in the central nervous system are varied. Given intravenously, it has negligible effects. Intracarotid injection of high doses can produce a brief period of convulsive twitching, but these relatively mild effects are probably due to the difficulty the drug has in penetrating into the brain. When acetyl choline is injected into the cerebral ventricles, a very different picture is seen. Doses of 2 micrograms given by this route to cats cause a deep depression. Curare, on the other hand, causes convulsions when injected intravenricularly.

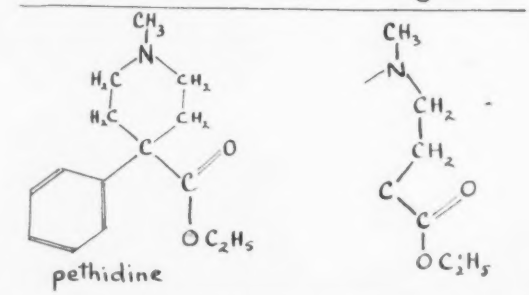
The exact function of acetyl choline formed naturally in the brain is still not fully understood, but there can be no doubt that it plays a very important part in many cerebral functions. The case of the disease epilepsy is interesting in this context. The convulsions seen in epilepsy have been traced to a dysfunction of acetyl choline metabolism. Diseased patches of motor cortex occur, which, while having an unimpaired ability to produce acetyl choline, are unable to store it. The continued outpouring of the acetyl choline from the impaired regions appears to trigger off convulsions. The anti-epileptic drugs, such as phenobarbitone and dilantin, have been shown to increase the ability of isolated brain tissue to bind and store acetyl choline, and this is presumed to be the manner in which they assist the epilepic.

Another important group of drugs known to interact with acetyl choline within the central nervous system are the strong analgesics of the morphine type. Much speculation has taken place as to whether this interaction is essential to their analgesic action. Morphine itself has weak anti-cholinesterase activity, and in addition it is fairly potent in blocking the release of acetyl choline from parasympathetic nerve endings, and in blocking the synthesis of the hormone in brain tissue. It also has a moderate atropine-like effect. What is even more interesting, however, is the syndrome which occurs on the abrupt withdrawal of morphine or related analgesics from people or animals who have been taking the drugs for a long time. This "withdrawal syndrome" shows all the characteristics of acetyl choline poisoning. It is easy to imagine that the abrupt withdrawal of the analgesic releases a flood of pent-up cholinergic activity. Other related analgesics such as pethidine and amidone also interact with acetyl choline, and in fact, were originally designed as antispasmodic drugs. Their analgesic effects were quite surprising when first noted. These drugs have quite strong atropine-like effects. A different type of interaction has been shown with several drugs which antagonise morphine. These have anti-cholinesterase action, and in fact eserine itself has some morphine antagonist properties. It has been claimed, possibly with overmuch enthusiasm, that resemblances may be traced between the formulae of acetyl choline and those of the analgesics. I will use morphine and pethidine to illustrate this, with the supposed cholinergic part of the molecule drawn beside.

However, there is still so much discussion on the mode of action of analgesics, and so many diverse physiological systems have been suggested, that the overall picture is most confused. Nevertheless, it is reasonable to assume that, as we learn more about the role of acetyl choline in the central nervous system, so we will come nearer to understanding the mode of action of the strong analgesics.



morphine



pethidine

It is possible to extend almost indefinitely the list of drugs for which interaction with acetyl choline explains at least some of their important properties. Briefly, this list includes the antifibrillary drugs quinidine and procainamide, the local anaesthetics such as cocaine, and metycaine, sedatives such as hyoscine, and at least one tranquilliser, chlorpromazine. All of these block some of the effects of acetyl choline. Also, at least one bacterial disease appears to involve an interference with acetyl choline metabolism. The very serious paralytic effects of infection with **Clostridium botulinium** are believed to be due to the action of the bacterial toxin in blocking the release of acetyl choline from nerve terminals.

In this talk, I have tended to emphasise, where I could, the first two of those three questions which earlier on I mentioned as embodying the essential nature of pharmacological enquiry. We have looked at the physiological reasons why various drugs produce their actions in the intact body, and we have, where possible, pointed out the salient chemical features of the drug molecule which explain why such a structure produces its characteristic effects. I have avoided discussing the third question, that is, the attempted prediction of pharmacological activity from inspection of the formula of a compound. Such an attempt would underline the fact that I have chosen my examples carefully, and often over-simplified my argument. There are in fact many well known drugs whose actions we cannot explain. And those of us engaged in fishing in the lucky dip of Organic Chemistry, looking for new drugs, know all too well how often a most promising looking new compound turns out to be as uninteresting as so much sand, while unexpected actions appear often in the most unlikely seeming compounds. Nevertheless, the brief outline I have given you summarises present-day thinking on these matters, and it seems likely that this scheme will be severely modified by future discoveries, but probably not entirely discarded.

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SNM

The Pharmacy of the B.P. 1958

Lecture Delivered by Mr. K. M. Henderson, Ph.C., F.P.S., on Wednesday, August 13, 1958, before members of the Pharmaceutical Society of Victoria

As a representative of Hospital Pharmacy, I felt it would be most appropriate to discuss certain items of the new B.P. which are more commonly applied within the hospital and to hospitalised patients.

The first group of agents I wish to discuss, briefly, are the **Gases of the B.P.**, which are Carbon Dioxide, Cyclopropane, Helium, Nitrous Oxide and Oxygen. The only change here is in the new labelling requirements. Previously unspecified, cylinders must now be painted a distinctive colour for each gas, viz.: Carbon Dioxide (grey); Cyclopropane (orange); Helium (brown); Nitrous Oxide (blue); Oxygen (white shoulder, rest black). In addition the symbol for the particular gas must be clearly printed on the shoulder of the cylinder. This improvement should assist in eliminating the administration of the incorrect gas to the patient.

Actually the new labelling standard has been in use since Feb., 1957, in conformity with the recommendation of the International Standards Organisation.

Amongst the other **general Anaesthetic agents** there has been little change with no addition and only Bromethol, otherwise known as "Avertin," a basal anaesthetic, has been deleted. Chloroform and Vinyl Ether are hanging on, rather ungraciously, whilst Ether, Ethyl Chloride, Sod. Thiopentone and Trichlorethylene remain unchanged. Paraldehyde must also be mentioned in this group because of its occasional use as a basal anaesthetic.

The **local Anaesthetic agents** provide rather more scope for discussion. They now comprise Amethocaine, Benzocaine, Benzyl Alcohol, Cocaine, Lignocaine, Procaine and Cinchocaine, of which Cocaine is a natural drug like the remainder are synthetic. Butacaine, Butyl Aminobenzoate and Orthocaine having been deleted.

The official local anaesthetics can be conveniently divided into three groups:

(1) Those which are effective both by the surface and injection methods, Amethocaine (otherwise known as Decicain), Cinchocaine (Nupercaine) and Lignocaine (Xylocaine).

(2) Procaine which is effective only by injection. It is unable to penetrate the intact mucous membrane to any appreciable extent and is therefore unsuitable for topical use.

(3) Those which are used only for topical application, Cocaine, Benzocaine and Benzyl Alcohol. Cocaine is effective by injection, but is generally considered too toxic; Benzyl Alcohol is too transient in its effect and liable to produce oedema; while Benzocaine is only sparingly soluble in water, and this prevents its effective use by any of the injection techniques. However, it can be used in the form of an oily injection where a delayed action is required, such as in anal fissure.

Appendix xxv of the B.P. sets out the strengths of the official local anaesthetics to be employed by the various routes of administration.

Hyaluronidase, which is known under the various trade names of Hyalase, Kinaden, Rondase, Wydase, is an important addition, and discussion concerning it may well follow on here.

Hyaluronidase is an enzyme prepared from the testes of mammals. Solutions are unstable and should be freshly prepared. When injected it has a "spreading" action in the tissues.

It depolymerises Hyaluronic Acid, which is a component of the tissue cement or ground substance of the tissues spaces, this action reduces the viscosity of the cement and so increases the permeability of the tissues. Use is made of the action to facilitate the absorption of injected fluids, for example, in the subcutaneous administration of relatively large volumes of fluids to young children, where intravenous therapy may be difficult or impossible. The Hyaluronidase may be either added to the injection solution or injected into the site prior to the administration.

It may also be used to promote the resorption of excess fluids and blood in the tissues as in oedema due to trauma or haematoma.

A further important application is to increase the effectiveness of local anaesthetics by giving a quicker onset, a wider field of action with a shorter duration of effect, but possibly some increased toxicity. The addition of Adrenalin to the Anaesthetic-Hyaluronidase mixture prolongs the period of anaesthesia without affecting the spread.

Hyaluronidase is never injected into an infected area because of the danger of spreading the infection.

From a purely pharmaceutical aspect **Propylene Glycol** can be regarded as an important addition as it has a number of important pharmaceutical applications as a vehicle or solvent. Unlike the other glycols which are quite toxic, Propylene Glycol is relatively non-toxic; this is due to rapid breakdown and excretion by the body.

Local application to mucous membranes or injection may produce some irritation, but this can be minimised by the addition of 1-4% of Benzyl Alcohol. Sterilisation can be carried out by autoclaving, but because of its hygroscopic nature it should be protected from moisture. Propylene Glycol as a vehicle and solvent provides a relatively stable environment for barbiturates, antihistamines, members of the B Group vitamins, aspirin, mephenesin and for otic preparations of chloramphenicol and the tetracyclines. However, it inactivates Penicillin. In addition it inhibits mould growth and fermentation.

As an injection vehicle it is used for intramuscular preparations of the barbiturates, in particular Sodium Phenobarb. Here Propylene Glycol is used in a concentration of 60-80%, such solutions are stable and can be autoclaved without breakdown of the barbiturate.

Such injection solutions, although not recommended for intravenous use, are in practice so used without apparent ill effects.

A further use is in the form of an aerial spray where in a diluted form it may be used for air disinfection to reduce the incidence of aerial cross infection in hospital wards.

Under the heading of **Antidotal Drugs** I want to consider Dimercaprol (B.A.L.), Nalorphine (Lethidrone), Neostigmine (Prostigmin), Picrotoxin and Menaphthone Sodium Bisulphite.

B.A.L., originally introduced as an antidote to the arsenical war vesicant, Lewisite, is now usefully employed as an antidote in the treatment of poisoning by arsenic, mercury and gold. It has a greater affinity for these metals than the proteins and the resulting combination of B.A.L. and heavy metal is rapidly excreted.

Nalorphine is an effective antidote to Morphine and other Opium derivatives or similarly acting narcotics such as Pethidine and Amidone, but it is useless against the depression due to barbiturates.

It reduces or abolishes most of the characteristic actions of the above drugs, i.e., stimulates respiration, reverses the fall in B.P., restores reflexes and awakes the patient from the narcotic state. This action makes it useful as an antagonist to narcotic-induced respiratory depression of the new born babe, as it crosses the placental barrier it can be given to the mother or directly into the umbilical vein of the baby.

An interesting application is its use to detect addiction to certain narcotics such as Morphine or Pethidine, injected into an addict it may precipitate withdrawal symptoms.

Picrotoxin is still with us, as an antidote to barbiturate poisoning it has largely fallen into disuse due to a general preference for Bemegride of the A.P.F.

Neostigmine is used to curtail the muscular relaxation produced by gallamine (Flaxedil), Laudexium (Laudolissin) and tubocurarine, but not that produced by Decamethomium or Suxamethomium salts. The dosage usually employed here is 2.5-5 mgm. intravenously.

Menaphthone Sodium Bisulphite, a water soluble analogue of vitamin K, is used intravenously in doses up to 100 mgm. to counteract dangerously low prothrombin levels due to the administration of anticoagulants such as Phenindione or Ethyl Biscoumacetate.

Of the **official items** which are likely to produce **toxic effects** to the people who handle them I want to mention two in particular.

Firstly, Chlorpromazine or Largactil. A number of reports are available concerning the development of severe contact dermatitis amongst nursing and pharmaceutical staff due to the handling of the tablets and the syrup. Although the B.P. has specified a sugar coating for the tablets, in addition to this a no-touch technique is advisable in dispensing.

Of the antibiotics Streptomycin has produced severe cutaneous sensitisation in persons handling the drug, and for this reason it is advisable to wear rubber gloves when preparing solutions.

Nor-Adrenaline is now official as the Acid Tartrate, available as "Levophed."

Nor-Adrenaline is a naturally-occurring hormone which is released along with Adrenalin from the adrenal medulla. Unlike Adrenalin it has no direct effect on the heart and its action of increasing the blood pressure is due to a general vaso-constrictive action. It is an important emergency drug, widely used to restore and maintain blood pressure in conditions of shock or certain acute hypotensive states.

The concentration usually employed is 4 micrograms per ml. of 5% dextrose solution, administered intravenously with careful supervision of its effect on the blood pressure. Administration needs to be continuous because of the rapid inactivation that takes place in the body. Great individual variation occurs in the dose required to attain and maintain a normal blood pressure, from 2-25 micrograms per minute. Overdosage will produce a dangerously high B.P.

Under the title of **miscellaneous surgical items** we can consider three additions in the form of Absorbable Gelatin sponge, Oxidised Cellulose and Absorbable Glove powder and at the same time an old friend—Catgut.

Absorbable Gelatin Sponge, which is available commercially as Sterispon, is a haemostatic agent prepared by heating a solution of gelatin (containing a small percentage of Formaldehyde), whisking to a porous foam, freeze drying, cutting into suitably sized pieces and sterilising by the official method for dry heat. The material cannot be autoclaved as this alters its physical properties.

It is widely used as a haemostat for capillary oozing or venous bleeding, but not for larger vessels; it depends for its action upon its physical structure, owing to the porosity it is capable of absorbing many times its weight of blood. It is applied with pressure to a bleeding point until it adheres and there encourages the formation of a clot. The material may be implanted in the tissues as it is absorbed by the body in a period of four to six weeks. The B.P. therefore specifies tests for absorptive power and digestibility of the official preparation.

Oxidised Cellulose, available commercially as Oxycel, is also a haemostatic pack prepared by treating surgical gauze or cotton with Nitrogen Dioxide to convert it to a material that is soluble in the tissue fluids. Applied to a bleeding surface it swells to form a brown mass and encourages the formation of a clot. Complete absorption by the body usually takes place in 4 to 7 days; however, it may take longer. Oxidised Cellulose is generally not used as a surface dressing except for the immediate control of bleeding because it delays healing.

This material depends for its action on the formation of a coagulum consisting of salts that it forms with haemoglobin. It inactivates Penicillin.

Absorbable Glove Powder is a lubricant for surgical gloves which is absorbed by the tissues, a distinct advantage over talc, which is not so absorbed, hence there is less possibility of the formation of adhesions.

This powder is best sterilised by heating in thin layers at 150 deg. C. for one hour. This temperature is critical. If heating is carried out at a higher temperature or for too long a period of time the absorbability of the powder is affected and there is a tendency for charring to occur. The B.P. also permits sterilisation by autoclaving at 115 deg. C. for 30 minutes. The same powder may be resterilised if need be without reducing the absorbability power, although it is recommended that this not be done more than two or three times.

This powder is prepared from maize starch by a special process, which removes the gelling properties without affecting either the tissue tolerance or the absorbability. Magnesium Oxide is added in a 2% concentration to keep the product in the form of a fine powder and to increase its lubricating properties.

The general requirements for a surgical glove powder can be summarised:—

(1) Sterile and therefore not a carrier of tetanus spores or other organisms.
(2) Absorbable so that if the powder falls into the wound from the gloves (as it does) absorption is complete and there is no tendency to form adhesions.
(3) Flows readily and has good lubricating properties.
(4) Does not clump or gelatinise on dry heat or steam sterilisation.

Absorbable Dusting Powder fulfils all the above requirements and is available commercially as Biosorb and K.285.

This powder has also been used as a satisfactory inert, easy to sterilise, readily applied powder vehicle for the topical application of antibiotics.

I want to include **Surgical Catgut** in this group of surgical materials, not because it is new or that there are any changes in the specifications for same, but merely because it fits in here so well. Catgut is the only official suture material and is used in two varieties; plain, which is absorbed in 5 to 10 days by the body, and hardened or "chromicised" catgut, which has been treated with chromium compounds to delay absorption by the body tissue.

Sizes range from 7 (the largest) to 7/0 (the finest) with corresponding differences in tensile strength. The sterilised material is packed into tubes containing Ethyl Alcohol with 5% of water and a suitable bactericide. This solution keeps the gut in a flexible condition. Many other types of suture material are, of course, employed in various surgical procedures, and these include braided silks, linen thread, nylon and stainless steel wire, also special suture clips.

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J19

The Muscle Relaxants of the B.P. now include Gallamine Triethiodide (Flaxedil), Suxamethonium Chloride and Bromide (Scoline and Brevidil M) and Tubocurarine Chloride, while Decamethonium Iodide has been deleted.

Tubocurarine Chloride is a naturally occurring alkaloid, whilst the other two are synthetic preparations.

The chief therapeutic use of this group of drugs is to promote muscular relxation in conjunction with general anaesthesia. The objective sought is the relaxation of skeletal muscles, particularly of the abdominal wall, so that operative procedures and manipulations are facilitated. As a result less anaesthetic agent need be used, the margin of safety is thereby increased and the post anaesthetic course is smoother. Patients are always provided with an effective airway and kept supplied with oxygen through a closed circuit apparatus. Ether itself has curarising properties so that when this is the anaesthetic agent the dose of the relaxant is usually reduced.

When the relaxant is injected intravenously the first muscles affected are those of the face and throat, then those of the limbs, followed by the abdominal muscles. The respiratory muscles are affected last, causing shallow breathing. Recovery of muscle function takes place in the reverse order.

The action of Gallamine lasts for 20 to 30 minutes, that of Tubocurarine 20 to 45 minutes, while Suxamethonium salts have only a transient action for 3 to 5 minutes, being rapidly destroyed in the body. Suxamethonium salts are therefore used where a brief period of relaxation is required for procedures such as intubation. It may also be given as a continuous intravenous infusion for prolonged procedures. An effective antidote is not available for Suxamethonium preparations, but because of its transient effect this is not a serious disadvantage.

The dose of a relaxant employed depends on a number of factors, including body weight, the type of operation and the anaesthetic agent employed. Doses may be repeated throughout the operation as required, usually in smaller amounts than the original. Timing has to be carefully controlled so that the patient does not suffer the experience of coming out of the anaesthetic while still under the influence of the relaxant. The relaxants are also used as adjuncts to minimise the convulsions of shock treatment and as diagnostic agents for Myasthenia Gravis.

Mephenesin (or Myanesin) must be included under this heading of muscle relaxants. Although it may be administered intravenously in the same way as the others to produce muscular relaxation in surgical operations it does not give as good a state of relaxation and the action is variable so that it is not generally used in this way.

The main use of Mephenesin is for the relief of spastic, hypertonic and hyperkinetic conditions either by mouth or by injection. A useful application of Mephenesin is in the treatment of tetanus to produce relaxation from the spasms.

In small doses Mephenesin will relax hypertonic muscles without appreciably reducing their powers of movement.

The Anticoagulants of the B.P. now comprise Heparin, Dextran Sulphate, Phenindione and Ethyl Biscoumacetate. They can be regarded as falling into two groups, the first comprising Heparin and Dextran Sulphate.

Heparin, a naturally occurring anticoagulant, is usually prepared by extraction from mammalian lung or liver, and it plays an important part as such an anticoagulant to prevent intravascular clotting, in the normal circulation. Heparin is used therapeutically for an immediate effect on the coagulation mechanism. It increases the clotting time of the blood, an action believed to be due to the high electro-negative charge Heparin carries, causing a disruption of the factors involved in coagulation. Various preparations are available for the administration of Heparin by the intravenous or intramuscular routes, and the latter includes a repository or retard form.

An antidote to Heparin therapy is rarely necessary. However, Protamine Sulphate, which counteracts the Heparin by neutralising the high electro-negative charge is a specific antidote.

Dextran Sulphate is the sodium salt of the sulphuric acid esters of polysaccharide dextrans and is called a Heparinoid, i.e., an anticoagulant with a Heparin-like action. The action is slightly more prolonged than that of Heparin and is also antagonised by Protamine Sulphate.

The dosage of Dextran Sulphate is almost identical with that of Heparin (on a unit for unit basis).

The **second group** comprises **Phenindione and Ethyl Biscoumacetate,** which differ from Heparin and Dextran Sulphate in being effective anticoagulants when given by mouth.

They are more reliable in their absorption and excretion rates than Dicoumarol, which was discarded by the 1953 B.P. Thus stabilisation of treatment is much easier. Ethyl Biscoumacetate is a coumarin derivative. Phenindone, whilst chemically entirely different, has a similar action.

The onset of action is much slower than that of the first group and takes from 24 to 36 hours to become apparent. Therefore, when anticoagulant therapy is initiated the two types of anticoagulants are often given in conjunction. Thus on the first day both Heparin and Phenindione may be given, Heparin having an immediate action. On the second day of treatment and thereafter Phenindione alone would be given. At this stage the Phenindione given on the first day would be coming into effect, and so on. Just as the onset of action is delayed so the effect of Phenindione and Ethyl Biscoumacetate takes a day or so to wear off after treatment is ceased.

The importance of regular laboratory controls in conjunction with the use of these drugs must be stressed as this is the only way to determine accurately the dosage requirements. The dosage is adjusted daily, according to the extent to which the prothrombin level of the blood has been reduced until a degree of stabilisation has been attained or therapy is no longer required.

As mentioned elsewhere in the case of a dangerously low prothrombin level due to either Phenindione or Ethyl Biscoumacetate, a water soluble analogue of Vitamin K is injected intravenously as an antidote.

It is appropriate to mention at this stage **Dextran,** and point out how it differs from Dextran Sulphate. Dextran Sulphate, as mentioned, has an anticoagulant action, while Dextran has no anticoagulant properties. Dextran injection is a solution in normal saline of Dextrans of a graded molecular weight. These dextrans are polymers of glucose and their molecular weight is adjusted to give a maximum plasma expanding action for a period of 24 hours.

The injection is used as a plasma expander given with, or in lieu of, blood for certain cases of plasma or blood loss. Administered intravenously it restores the circulating blood volume until the normal replacement processes can make good the loss.

The injections, in keeping with their increasing importance, now occupy an official monograph and not merely an appendix. The method for the preparation of an oily injection by the aseptic method is no longer official. Other than that there have been no changes in the official methods of sterilisation. Containers must be of such a quality that they do not yield small solid particles. This is of prime importance for the containers used for large volume intravenous solutions.

The B.P., whilst still permitting multi-dose injection vials for all but intrathecal intracisternal and peridural

injections, states that an excessive number of doses in such containers should be avoided and that the period of time between the withdrawal of the first and the final doses should not be unduly prolonged. Much concern has been expressed by various authorities at the multi-dose type of injection vial, chiefly because of the danger of contamination due to faulty technique resulting in a lowering of the therapeutic efficiency of the contents or more seriously a cross infection such as hepatitis.

Lately there has been a world-wide trend to scrap the multi-dose vial and employ only single dose ampoules. The B.P. authorities would have done well to take a more decisive step in this matter. The volume deviation permitted in any one single-dose container has been reduced 15% to 10%, whilst the average deviation permitted in ten such containers remains the same at 5%.

The main changes in monographs include Aminophyllin injection: the intramuscular form, although still in common use, is no longer an official form and the dose for the intravenous route only is given.

Apomorphine injection must now be sealed under an atmosphere of nitrogen and can be autoclaved. Atropine injection and Hyoscine injection may now be sterilised by autoclaving. Previously only the bactericide or filtration methods could be used. Aneurine injection may no longer be sterilised by autoclaving; the filtration method should be used.

Streptomycin injection must now contain suitable stabilising agents and may contain a suitable buffer. The official strength for this injection has been altered from 0·25 grammes per ml. to 0·33 grammes per ml. Storage is altered from 1 month at 4 deg. C. to 1 year at 20 deg. C., due to the presence of the stabilisers.

Additions include intravenous forms of the three tetracyclines and intramuscular forms, which contain added procaine, of the Oxytetracycline and Tetracycline.

Hydrocortisone Acetate Injection and Hydrocortisone Injection are two important additions which require careful attention. Hydrocortisone Acetate Injection is a suspension of very fine powder in normal saline and is used only for intra-articular injection (i.e., into joints for the relief of joint pain). Hydrocortisone Injection is prepared immediately before use by mixing an alcoholic solution of Hydrocortisone base with an isotonic vehicle such as normal saline or Dextrose 5% in the ratio of 1 to 25, and this solution is then used by the intravenous route for acute states of adrenocortical insufficiency.

Injection of Menaphthone Sodium Bisulphite, which is a water-soluble form of a Vitamin K analogue, replaces the oily injection of Menaphthone. The combination contains about 50% of Menaphthone and is suitable for i.v. or i.m. use.

Mephenesin Injection illustrates the use of propylene glycol as an injection vehicle to stabilise the product. It is rather surprising that the B.P. does not yet list an intramuscular form of Sod. Phenobarb. similar to that mentioned under the uses of Propylene Glycol as this form of administration is very widely used, certainly more so than the official i.v. form, which has to be freshly prepared.

Compound Injection of Sodium Chloride (Ringers Soln) has been deleted, whilst combinations of Dextrose and Sod. Chloride have been admitted. It is interesting to compare the monographs on Suxamethonium Bromide and Chloride. The Bromide must be freshly prepared, whilst the Chloride may be stored at 4 deg. C. for up to two years.

In the injections notable deletions include Injections of Bismuth, Sulpharsphenamine and Neoarsphenamine, none of which will be missed by the unfortunates who had to endure them. The Streptomycins other than the sulphate and dihydro forms are deleted, and so is injection Morphine and Atropine, the last of the Morphine combinations.

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Hazards of Radioactivity and the Community

Summary of lecture delivered to members of the Discussion Group of the Pharmaceutical Society of Victoria by Mr. Alistair Lloyd (September, 1958).

I have selected this topic as one of general interest and importance to the modern community and one that is especially so to pharmacists, who have such an important part to play in the education of the public in all matters of health protection.

The future development of civilisation is now bound up with the exploitation of nuclear energy. Its use, like that of other sources of energy, entails risks, BUT the risk is controllable and, within limits, can be accepted.

It is the scale and NOT the nature of the risk that is new, as human populations have always been exposed to natural radiations of low intensity—just how much and from where I will discuss later.

Nature of Radiations and Their Action on Living Cells

Ionising radiations are so called because they form electrically charged particles, Ions, in matter through which they pass.

The common types are X and Gamma rays, which are very penetrating and can traverse the whole body; Beta rays, which penetrate only to a few centimetres; Alpha rays, that penetrate less than a millimetre.

Note, however, that the Beta rays cause much more dense ionisation than the X or Gamma rays, and that Alpha rays cause even denser ionisation still.

Biological effects are related to (1) The intensity of radiation; (2) the period of exposure.

Basic unit generally used for dosage is Roentgen (r).

All tissue can be killed if exposed to sufficiently high dose.

The effects of doses (below those which damage tissue irretrievably) may be modified by some process of healing, so that the response to a dose spread over a long time may be much smaller, or different from the effects of the same dose given in a short time.

This does not apply, it is believed, to the effect of genetic mutation produced by irradiating reproductive cells, the consequences of which are cumulative and irreversible.

Effects of Radiation on the Health of the Individual

Knowledge of these effects comes from four main sources—

1. Use of X-ray and radium to treat disease.
2. Study of occupational diseases, e.g., medical radiologists, luminising industry workers, radioactive ore miners.
3. Study of atom bomb explosion victims.
4. Animal experiments.

All effects of radiations are deleterious.

However, the effects on individual patients who benefit by eradicating malignant tumours, result from the selective damage to the tumour cells.

The nature and severity of radiation injury is determined by the type and dose of radiation; part and extent of body radiated; length of period of exposure; the age of the person.

Harmful effects may be classified into those which manifest themselves within a few weeks of exposure; delayed effects which may not show for many years.

Effects within a few weeks—a dose of 500 r. to the whole body at once would cause all exposed to develop acute illness and 50 per cent. would die. (In normal civil life such exposure would occur only under most unusual circumstances). With smaller single dose of 100 r., 15 per cent. would suffer acute illness, probably none die. Single dose of 50 r., acute illness would be very rare.

Relation between dose and effect not strictly proportionate, as there is some cumulative effect if successive doses have only short time betwen them, at least until large effects have been produced.

Delayed effects—these may occur any time after exposure, after the second month. These may include—

(1) Disorders of skin and underlying soft tissue and bone.
(2) Cancer.
(3) Cataracts.
(4) Anaemias and leukaemia.
(5) General shortening of life span (from animal experiments).

Considering some of these effects in more detail—

Leukaemia is a disease in which there is uncontrolled production of white blood cells.

(1) Animal experiments have indicated relationship.

(2) Evidence of same effect on humans stems from two main sources—(a) Study by Atomic Commission at Nagasaki and Hiroshima; (b) Study of patients with ankylosing spondylitis treated with X-rays.

Atomic Bomb Casualty Commission

Between 1947 and 1954, number of cases occurring of those exposed at time of explosion was 91 proven and 14 suspected. The normal expectation in such a population would have been 25 cases.

As it occurred much more frequently amongst those who had received larger dose and had suffered some acute illness, there seems to be a definite connection between the two. Latent period, about six years.

Ankylosing Spondylitis—a disease of the joints, particularly in the spine, which progressively lose their freedom of movement.

In the treatment of this condition, very extensive areas of the body are exposed to radiations.

Records of about 14,000 patients treated this way between 1933 and 1954 show that up to 1955 38 had developed leukaemia.

Although only about one-third per cent., this is about ten times normal expectation.

There was NO increase in 400 patients not treated with X-ray, although this number is not stastically large enough to say that there is no predisposition to leukaemia in patients with ankylosing spondylitis.

However, there seems enough evidence to show a relationship. Latent period, about six years.

Note—the conditions given above are not comparable with long-term exposure to low dose rates, as may be encountered with workers with radioactive substances. There is some evidence that there is some relationship between the two (in the numbers of radiologists dying with the disease), but knowledge is too scanty to draw reliable conclusion.

Cancer—There are two characteristics of radiation-induced cancer. Tendency of tumours in tissues already severely damaged by radiation; long latent period (20 years or more).

Evidence of this comes from—pitchblende miners who succumbed in large numbers to lung cancer due to inhalation of radon and other radioactive substances.

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Latent period, 17 years. Dose to lung estimated at about 1,000 r. over that period.

Luminising industry workers had high incidence of bone cancer due to practice of "forming" brush tips with lips, with ingestion of radium, mesothorium, plutonium, and radioactive strontium. Latent period, more than 15 years.

Early radiologists (54 of them) had examples of radiation-induced skin cancers, especially on their hands. Dose must have been several thousand r.

Cancer of thyroid in children had been sequel to treatment by irradiation of enlarged thymus—latent period, seven years. However, probably other factors associated with this occurrence.

Other Delayed Effects

Whole body exposure, even to moderate doses, causes fall in the number of both red and white blood cells, which, if allowed to be unchecked, can develop into aplastic anaemia.

Cataracts have been induced by neutrons—however, exposure to neutrons in civil life is extremely unlikely.

On skin, depending on dose, ranging from loss of hair (300 to 400 r.), to severe and permanent damage (for doses of 1,000 r.). (These areas are more likely to foster the formation of tumour.)

During pregnancy exposure may cause miscarriage or stillbirth if dose is large. Various other developmental abnormalities have been noted at Hiroshima, especially microcephaly (a partial failure of the development of the brain).

Genetic Effects of Radiation

This is difficult to determine, and the conclusions are only provisional.

Basis of heredity—determinants of heredity are called genes, carried on chromosomes in the nuclei of cells. Chromosomes are present in pairs, one member being of maternal origin, and the other paternal. There are 24 pairs in humans, with probably thousands of genes associated with them.

Two genes that occupy corresponding positions on paired chromosomes are called alleles. Alleles of different kinds arise from the process of mutation and are thereafter reproduced in their altered form.

Genes determine all the hereditary properties in man —hence mutation causes changes in offspring. It is usually considered that all mutations are harmful.

All genes are subject to mutation, and mutation occurs spontaneously all the time at a very low rate. Factors affecting mutation only affect frequency. New alleles are eliminated by natural selection until equilibrium is reached with new rate.

Principles of the genetic effects of radiations—little direct knowledge, but with reservations, inferences can be drawn from effects on other organisms.

Radiations only have consequences on reproductive cells, or the cells in the gonads that are their precursors. Two effects have genetic results—chromosome damage, genes mutate more frequently.

Chromosomes only damaged by prolonged exposure—thus are only a minor hazard.

Radiations only increase gene mutation rate—they do not cause new types of genes. The increase is directly proportional to the amount of additional exposure to radiation and any additional exposure must be expected to raise mutation rate further, if only by a minute amount.

Genetic damage is cumulative and irreparable—a long, continued exposure induces as much change as a single equal dose of a higher intensity.

Depends a lot on irradiated person. If exposed person is past age of reproduction, it follows that genetic effect is nil.

Effects of increased mutation on incidence of disease —role of heredity may range from a predisposing to a preponderating cause.

Effects caused by single gene are more easily calculated, but unfortunately such data is scanty.

Achondroplasia, haemophilia, and phenylketonuria are examples of diseases caused by single genes. If mutation rates of these genes were to rise, and remain at twice present level, then the incidence of their associated diseases would ultimately rise to twice present frequencies, although at different rates.

For example, achondroplasia, a form of dwarfism, would rise 80 per cent. above present value in one generation; haemophilia, condition where blood will not clot, would take six generations to rise by 90 per cent.; phenylketonuria, condition of severe mental deficiency, would take 50 generations to rise 50 per cent.

Mental diseases are diseases where hereditary is important. If mutation rate were to double, it is estimated that in one generation, low-grade mental deficiency would rise by three per cent., and the principal two, schizophrenia and manic depressive reaction would rise by one per cent. However, it would take many generations to double. It is considered that including mental disease and others of hereditary origin, a doubled rate of mutation would not cause very great increase of such disease.

Not all variation is due to single genes—e.g., physique, intelligence and life span vary with endless gradation, the hereditary portion of which is due to the combined action of many genes.

An increase in mutation rate will tend to increase the numbers of extreme types at the expense of more average types. In a few generations only a very slight, almost imperceptible change would be noticed—a doubling of variation only being achieved after hundreds of generations.

The doubling dose in man—assessment of this figure is difficult, as it requires an estimate of a large sample so as to be representative, as it cannot be assumed that all genes are equally radiosensitive, nor that all genes have the same natural spontaneous mutation rate. If all mutations were due to radiations, then dosage that doubled frequency would appear to be equal to that received from natural sources, e.g., a dose to the gonads of about three r. in 30 years. However, available evidence suggests that natural radiation only causes between 2 and 20 per cent. of mutations.

If this is so, then doubling dose is between 15 and 150 r.

However, the most commonly accepted estimate is that the doubling dose is between 30 and 80 r. as a general rule for the majority of human genes.

Even if doubling dose were only 15 r., it is extremely improbable that more than a small fraction of population would receive such a dose. Even if they did, as there is such a large proportion of natural mutations, there would be no observeable effects on their offspring for several centuries.

For levels of radiation up to the doubling dose, and even some way beyond, the genetic effects of radiation are only appreciable when reckoned over the population as a whole, and need not cause alarm to an individual on his own account.

Existing and Forseeable Levels of Exposure to Radiation

Doses of radiation which may be of significance to an individual may have some genetical effect to the population. Exposure levels should therefore be expressed

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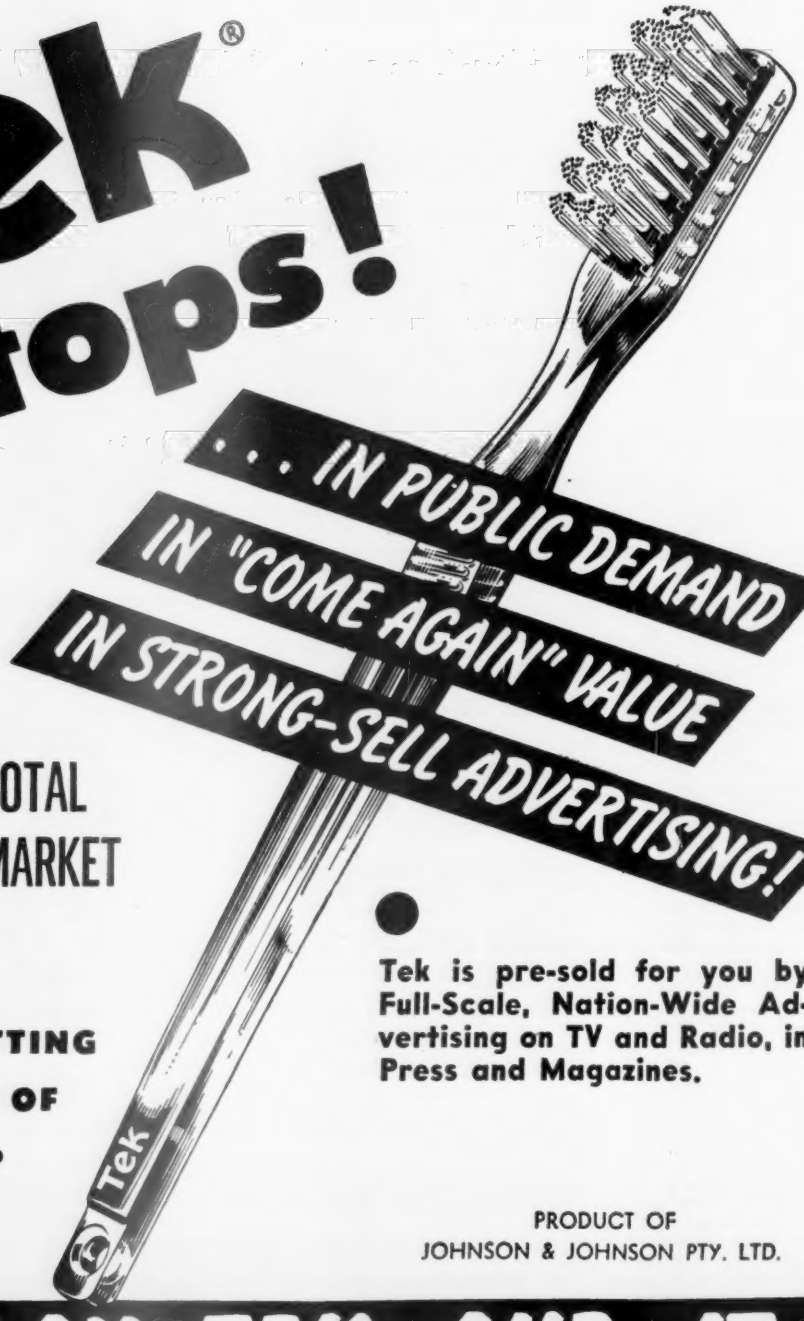

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in terms of the total dosage to the gonads received by the population as a whole, during the period of the reproductive life.

Natural sources of radiation are cosmic rays, and the natural radioactive elements (that occur in the body, and in the natural surroundings). It is estimated that a person receives a total gonad dose (average) of three r. over 30 years.

Radiation from appurtenances of civilisation—increasing use of X-rays and isotopes has meant that increasing gonadal doses are received from these sources.

Summary of Estimated Population Doses of Radiation to the Gonads Expressed as Percentages of Natural Background

Source of Radiation	Approximate dose to gonads as a percentage of natural background
Natural background	100
Diagnostic radiology	At least 22
Radiotherapy	?
Shoe fitting	0.1
Luminous watches and clocks	1
Television sets	Much less than 1
High-altitude flying	Insignificant
Occupational exposure—	
Radiology and industry	At least 1.6
Atomic energy authority	0.1
Fall out from test explosions	Less than 1

Contamination by fallout—From devices already exploded, the increase to the natural background may expect to be less than 0.02-0.04% of the natural radiation. If firing were to continue at present rate, radioactivity would gradually accumulate so that an individual would receive about 0.026 r. in 30 years—or about one per cent. of that from natural sources.

However, if rate of thermonuclear explosions, which have such high yield, is increased, these figures will be greatly exceeded. The special hazards of fallout are not the inhalation of particles (in peace time) as this is quite negligible, but are rather due to the deposition of radioactive strontium, which is soluble and is concentrated in bone when ingested. However, tests have indicated that this is not at present a great hazard, as highest level found has been 1,000 times below that considered the maximum permissible even to those occupationally exposed.

Assessment of the Hazards of Exposure to Radiation

In attempting to assess the medical and genetic consequences of exposure a suitable base standard of dose is the naturally occurring one, because it is the level to which man has been long adjusted—i.e., the "Natural Background."

In considering the genetic effects of radiation, we are concerned with the sum, to the whole population, of the total gonad dose received by individuals from conception to the end of their reproductive life.

In considering the effects on individuals, we are more concerned with his whole span of life, and the rate at which the total dose is received.

Dosage and effects on individuals—the acute effects that appear within two months do not usually enter into normal civil calculations—and are unlikely even if exposures of up to 0.3 r. per week are experienced.

Considering the delayed effects on the body—leukaemia is the most easily induced result. Concerning this, it is considered that this probably would not occur if 200 r. lifetime dose is not exceeded.

Provided that the dose is distributed over tens of years and the maximum weekly exposure, averaged over 13 weeks, does not exceed 0.3 r.

(However, it is strongly recommended that the dose be kept as low as possible.)

Dosage and genetic effects are essentially problems concerning future welfare of population as a whole.

Note that a small proportion of population could receive doses that would not harm them, but would have dramatic genetic effects if applied to the population as a whole. It is estimated that provided not more than one-fiftieth of the population are concerned, there should be no undue harm caused by exposure of up to 50 r. from conception to the age of 30, additional to that from background.

There are no figures available for the whole population dosage levels, although the International Commission on Radiological Protection is now studying it—no doubt it will be a very low figure.

Peacetime hazards from nuclear radiation—as nuclear energy is increasing in use for power, it must be realised that its use will probably lead to less injuries and illness than more conventional sources.

Main hazard will be a genetic one—at present the risk is small and it is unlikely it ever will be a large one.

But from the point of view of population genetics, all possible extra radiation should be avoided, and therefore indiscriminate use should be avoided.

To this end it has been suggested, among other things, that—

1. Present use of diagnostic radiology and radiotherapy, particulary of children, should be reviewed.

2. X-rays for shoe fitting should be abandoned (except for orthopaedic reasons).

3. Watches and clocks with radioactive luminous dials be only used when necessary.

4. TV tubes must continue to be designed to prevent emission of X radiations.

Test Explosions of Nuclear Weapons

1. Genetically at present the effect has been insignificant, but might not be so if testing of thermonuclear devices continues.
2. Watch will have to be kept that Sr-90 levels do not rise any further; at least not above 1/100 the maximum permissible limit.

Wartime Hazards

The area contaminated by groundburst thermonuclear devices is measured in thousands of square miles. If insufficient bombs are exploded no part of the world would escape biologically significant degrees of exposure, or the load of distress and suffering to individuals and society which such exposure would entail.

I hope that I have been able to make the hazards and problems associated with radioactivity a little clearer. If I have seemed to paint a gloomy picture, I would like you to remember that what I have been talking about has only been the hazards of nuclear energy. I have not mentioned, except in a small way, the benefits that will accrue from the use of this energy, which will, in my opinion, far outweigh any risk in using it. I hope that we all here now can benefit from this knowledge, and can keep any hazards that we, the public, may be exposed to, down to the lowest possible level, while enjoying all the prosperity that nuclear energy can bring.

The Development of the Science of Nutrition

With Special Emphasis on the British Contribution Thereto

By Greta Burman, Ph.D. (Vienna) (Victorian College of Pharmacy).

PART II

Cod Liver Oil and Rickets

It is difficult to say when cod liver oil was first used internally. In the fishing villages of Northern Europe it must have been part of the daily diet for as long as anybody can remember. It might have been just "chance" that made the doctors **Kay** and **Darby** use it clinically. Although they had been very successful, their method does not seem to have been followed at all by others. At least not in England, where it was not mentioned as a remedy for more than fifty years.

A 17th Century Work on Rickets

The Germans took up Dr. Kay's recommendation of cod liver oil and used it extensively.

In 1842, **John Bennett,** who had studied in England as well as France and Germany, brought the idea back to England. In "The Lancet" and other medical papers cod liver oil and its merits were given a lot of space.

Following this the London Zoological Society made a world famous experiment. **Dr. Bland Sutton** had heard that the Society had been unable to rear bear and lion cubs; that they developed severe rickets and died. He had read about Bennett's work and also **A. B. Garrod's** papers on the possibility of milk containing essential mineral salts and advised the cubs be given crushed bone, milk and cod liver oil in addition to their previous diet of lean meat only. The cubs grew well and no signs of the diseases reappeared. This was a tremendous achievement.

The enthusiasm with which cod liver oil was prescribed from then on was only somewhat dampened by its horrible smell and taste. In 1848 **Charles Fox** was able to process an almost colourless and odourless oil through cooking the cod livers in steam-jacketed vessels.

The beneficial factor in cod liver oil was not recognised. Some attributed it to iodine, although the addition of iodine to other oils had no effect.

Even as late as 1912, when **Blasius Williams** showed that there was no correlation between iodine and the therapeutic value of cod liver oil, vitamins could not be given the credit yet, as it was only in that year that **Sir Frederick G. Hopkins** demonstrated convincingly the presence of accessory food factors.

Williams and Bennett were, unfortunately, another couple of scientists who fought openly in the medical press for recognition of their respective contributions to medicine.

In 1916 **Prof. Mellanby** was able to prove beyond any doubt that one of the vitamins was necessary for formation of healthy bones and teeth and that its presence accounts for the curative value of cod liver oil.

He had studied the physique of soldiers during the First World War, when an unbelievably large proportion of men had to be put into category C. He had investigated the calcium-phosphorus relationship and rickets in animal experiments and found that fats played an essential and beneficial part in sound bone formation, through the presence of fat-soluble vitamins.

After the war, in 1919, the Medical Research Council sent to Vienna, on Prof. Mellanby's recommendation, the Sub-Committee on Accessory Food Factors. **Dr. Harriette Chick** was put in charge. An Australian, **Dr. Elsie Dalyell,** was also a member of the mission.

They were not received very enthusiastically in Vienna, even though its population suffered greatly from malnutrition. Rickets and scurvy were rampant, there were many deaths from hungeroedema. (Hunger oedema is caused by low protein, high liquid diet. The low protein concentration in the blood makes it less viscid, it seeps through the capillaries, and may eventually cause death.)

Vienna's medical school was world famous and nobody there would believe that the British who were known to have quite a bit of rickets in their own backyard (the English disease!) could tell them anything. Austrian doctors knew nothing of vitamins, had never heard of Mellanby. Prof. Pirquet, the leading authority on pediatrics, received the committee with cold courtesy and told its members quite openly that he had little expectation that it would get any results of much practical value. He held rickets for an infectious disease prevalent in that part of Europe. Later, however, he

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admitted with admiration that the "crucial experiment had been successful." A large number of children had been kept free from rickets, and affected ones had been healed. Dr. Chick, who is now Dame Harriette, will never be forgotten in Vienna.

Food Preservation

British contributions to food preservation, probably because of the country's preoccupation with long sea voyages, are quite considerable. Salting, pickling and drying had been known for centuries. But for the first time we hear of the preservation of meat in its fresh state through **Robert Boyle,** who writes about it in his thesis: On the Usefulness of Experimental Natural Philosophy. He describes the process accurately. Meat should be roasted, cut into cubes, and packed closely in casks, the air spaces to be filled with melted butter, thus indicating the importance of air replacement.

In 1807 **Plowden** took out a patent for preserving meat and other foodstuffs by encrusting with a thick gravy. Here again the exclusion of air is considered. Another attempt—it is not recorded whether it was successful or not—was made a few years later "strong, hot animal jelly." **Prof. Redwood's** scheme to coat fresh meat with melted paraffin did not work out.

Several other attempts were made before tinned foods came on the market, such as impregnating meat with sulphite (**Estor**). An Australian company used this method together with melted butter. **Morgan,** in 1864, suggested to inject animals shortly after death with a preservative solution of salt, sugar, nitrate and spices.

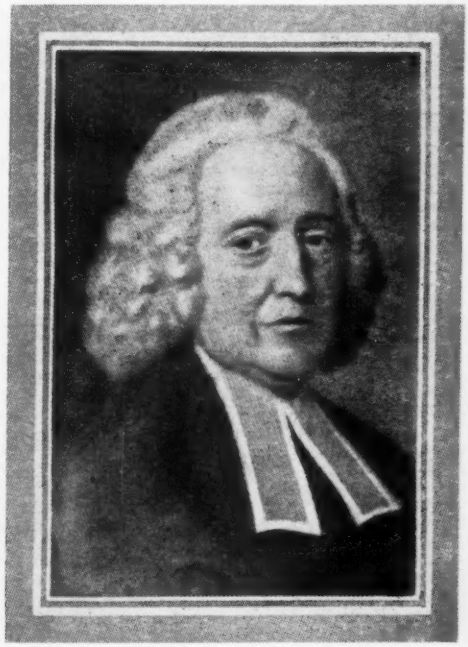
Robert Boyle

Donkin, of Hartford Ironworks, applied an invention of the Frenchman, Appert, who had preserved food by heating it in closed glass jars, to tinned iron containers, with excellent results (1813). This brings us right up to present-day methods.

Refrigeration of Australian and American meat was far preferable to salted as well as canned. But it could not be done on a large scale until the production of ice had become reasonably cheap. An Australian, **James Harrison,** made the first practical machine, based on the evaporation of ether.

Nutritional Science

The development of a scientific understanding of all the processes involved in digestion and metabolism of food and production of energy was, naturally, a very gradual one. It was closely bound up with progress and discoveries in general chemistry, physics and physiology.



Stephen Hales (1671-1761)
(An early English worker in physiology and nutrition.)

Digestion was thought to do internally what the often observed acetous and putrefactive fermentations did outside the body. Reaumur showed by experiments on birds that digested meat was not putrid, but that softening and dissolving took place.

In 1777 **Stevens** in Edinburgh studied meat digestion with a stone swallowing man and dogs. He fed them perforated metal spheres containing weighed food. He also incubated meat in gastric juice and found that there was no putrefaction, while blanks done with meat and water instead of gastric juice became quite putrid. He realised that "a powerful solvent was secreted by the coats of the stomach." With the tricks that fate will play, **Stevens'** name is quite forgotten, while Spallanzani's is known to every schoolboy. Spallanzani of Pavia's work gave identical results, but he became much more famous, possibly because he had used his own body for the study, having sewn food into small linen bags and studied their contents after elimination.

There was much speculation regarding the mechanism by which the warmth of the body is maintained. The old view that heat was generated through the friction of the blood as it moved through the blood vessels, was not tenable for long. In 1777, the year of the publication of Stevens's work, **Adair Crawford** came very close to the truth when he thought that the air we breathe in brought an "elementary fire" to the lungs, which was given off as heat during the circulation of the blood,

while an inflammable principle was expelled by the lungs when more of the elementary fire was absorbed.

Lavoisier's and Laplace's findings verified this elementary concept. Having weighed the carbon dioxide that was given off and calculated the ingested carbon, they could show that the heat given off was proportional and point out the relation between respiration and combustion.

Astley Cooper, encouraged by some of Lavoisier's studies which showed that foods consisted mainly of carbon, oxygen, hydrogen and nitrogen, and Francois Magendie's finding of nitrogen as an essential food constituent, began to test digestibility. He examined dogs' stomachs at intervals after having given different types of meals and found considerable difference between times required for solution.

Justus von Liebig, too, built his work on Magendie's. He introduced the distinction between flesh formers—nitrogenous foods and heat and energy formers—the non-nitrogenous foods.

Lyon Playfair, an enthusiastic pupil of Liebig's, introduced his ideas to England.

Meanwhile, another important, but forgotten, investigation, because a more famous originator had done similar study, was carried out by **Dr. Beaumont** in Canada. One of his patients had been wounded in the stomach by a shotgun. The wound healed, but a permanent opening was left, through which Dr. Beaumont studied the processes of digestion. He could show then that it was neither fermentation nor putrefaction that caused it, but solution of the food through a gastric juice containing hydrochloric acid and coming from tiny glands in the mucous lining. He could see that its amount and character were influenced by the type of food, but also by fasting and mental disturbances such as anxiety and anger. This happened seventy years before Pavlov!

While Liebig and his English disciple, **Playfair,** claimed that muscular activity used up the substance of the muscles and consequently more meat would be necessary for manual work, **Dr. Edward Smith,** who carried out investigations at a penitentiary, had found that the amount of nitrogen excreted had no relationship to muscular work, but only to the nitrogen in the food taken. Unfortunately, as it will happen again and again, he was not heeded by his contemporaries. It was not until the year 1889 that Swiss scientists proved him right. Muscle oxidises sugar and fat, performs its work by virtue of the energy which these oxidations make available.

This was the beginning of the application of scientific methods for the quantitative assessment of the nutritive values of foods. **Count Rumford,** who was born in America of English parents and lived most of his life in England, called it the New Science of Nutrition. The first steps were to determine carbon and nitrogen in respiration and excreta respectively and analyse food mixtures which would supply these. Playfair collected data of such tests done on soldiers, sailors, hospital and prison inmates, as it is easier to get reliable as well as bulk information from institutions than from independent individuals. He studied the composition of their food and worked out a ratio of "heat givers and flesh-formers" in 1853!

Letheby in 1858 published lists of foods giving relative proportions of fibrin (protein), fat, carbonaceous matter (starches) and salts and worked out how these made up the average diet of soldiers, labourers and prisoners.

These investigators were interested to find out how much food man needed to supply his physiological requirements. The connection between the energy requirements of the body and the energy value of foods which were to supply these were not understood, until **Groves** and **Joule** had made it clear that energy in form of heat and energy in form of mechanical work were interchangeable. Then the significance of the energy value of foods began to make its impression on the minds of the people.

On the other hand, when it did become known, people believed, and even claimed to have seen, persons suddenly bursting into flames through "spontaneous combustion."

Prof. Frankland was the first to work out quantitatively the energy values of many foods. He oxidised weighed samples of food with potassium chlorate in closed containers immersed in water, and measured the rise of temperature of the water. He then calculated the value of the food as a source of energy by converting heat units to work units. It had been discovered shortly before that the heat required to raise the temperature of 1 lb. of water by 1 degree Fahrenheit equalled the work performed when 772 lb. are raised one foot high. From Frankland's figures **Letheby** calculated the energy equivalent of the average diet. He found it much higher than energy expenditure and suggested that some was lost as heat and some doubtlessly needed for the working of the internal organs, and also the brain. The latter claim was denied by more recent studies: "brain workers need no food."

Early in the nineteenth century the Academie des Sciences offered a prize for a thesis on the origin of animal heat. It was won by a young Frenchman, Despretz, who had put an animal into a chamber surrounded by water and measured the rise in temperature of the water as well as the carbon dioxide expired. Knowing that the carbon dioxide was produced through oxidation of carbon, he then calculated the heat this process represented.

Other workers on the Continent elaborated on this, putting men inside the chamber, measuring air inflow and carbon dioxide outflow. Finally really accurate information was obtained regarding energy requirements under various conditions. It was from then on that the calorie was introduced into England instead of the foot-pound.

Towards the end of the nineteenth century five essential nutritional principles were known—protein, fat, carbohydrate, water and salts—and also their respective functions, i.e., either formation of new tissues or replacement of wear and tear, providers of heat and energy; calcium and phosphorus for bones and teeth, iron for the red blood corpuscles, water, sodium and potassium salts for the body liquids. There were also accessory factors, but at that time certain stimulants or appetisers were meant by this term. These were only essential inasmuch as without them insufficient food for the maintenance of health might have been taken.

Then in 1881 came the famous experiments with purified nutrients compounded to represent the composition of milk. Later even the ash of milk was added. (Bunge and Lunin in Switzerland). Only the animals on fresh milk survived. The threshold of vitamin discovery was nearly reached, but not crossed until twenty-five years later by **Hopkins,** Pekelharing and Stepp.

Nutritional science could have never developed had it not rested on the fundamental sciences, chemistry, physics, and, later, on biochemistry. However, biochemistry itself received a tremendous impetus through the nutritional studies, the problems that arose from them and their solution. Many of these solutions are still incomplete today, new problems are constantly being created, the field is steadily widening and new aspects opened up.

The study of fermentations has not only shown the chemical reactions which take place in animal and plant life, but also the agents which bring them about: the enzymes. **Harden** and **Young** could demonstrate in 1906 that enzymes needed co-enzymes. They had found co-zymase as necessary addition to enzymes for alcoholic fermentation. **Peters** was the first to define the biochemical function of the vitamins by demonstrating that vitamin B_1, Thiamin, is an essential component of enzyme systems, responsible for the oxidation of pyruvic acid.

The study of nutrition led to the discovery of essential food factors, the part they play in animal metabolism, not only in the macro-system of the whole organism, where their absence leads to deficiency dis-

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½ doz. DR. MACKENZIE'S MENTHOIDS—Large	2	0	6
½ doz. DR. MACKENZIE'S MENTHOIDS—Small	1	2	6
1 doz. FORD PILLS—Large ..	2	14	0
2 doz. FORD PILLS—Small ..	3	3	0
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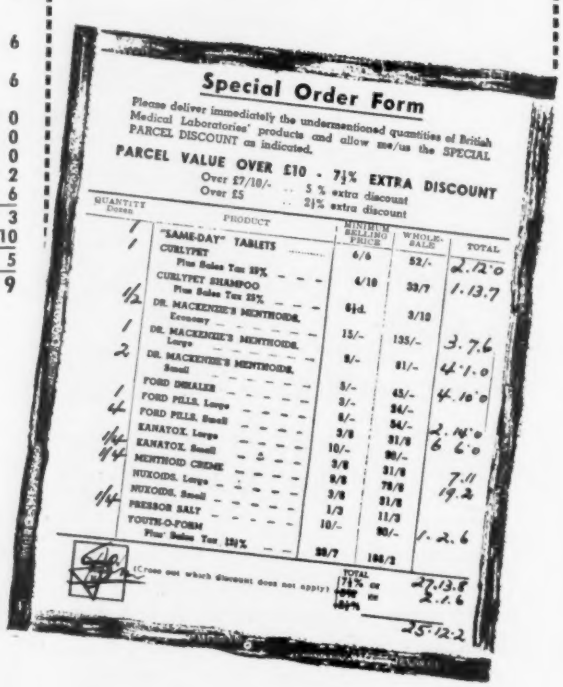

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	NUXOIDS. Small	3/8	31/8	
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eases, but also the part they play in cell reactions, as co-enzymes.

When the first anti-vitamin was discovered more light was thrown on the biological action of the vitamins themselves, but it also led into another field, that of chemotherapy. As anti-vitamins antagonise the metabolic action of vitamins, they could be used to deprive some pathogenic micro-organism of the vitamin it needed for multiplication.

Each new discovery leads to better understanding of previous ones and throws new questions into profile.

Some readers will probably think that I have dealt in too much detail with some of the discoveries and the problems which had to be solved, the unavoidable errors which had to be overcome, and left out many which should have been included in such a survey. It was not intended to write a complete history of nutritional science, but to lay stress on the necessity of many contributions before one fact can be established, one small step forward can be made.

Many men, some of whose names were hardly recorded, have worked conscientiously, and often without reward, making discoveries which are not recognised for a hundred years, or making no discoveries at all, just patiently fitting in tiny little pieces into the greatest jig-saw puzzle of all—the understanding of life.

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Student Activities

NATIONAL ASSOCIATION OF PHARMACEUTICAL STUDENTS OF AUSTRALIA

This year the National Association of Pharmaceutical Students has decided to make another attempt at compiling a song book.

I think most of you are familiar with the contents of a students' song book. Briefly, here are the main features I will attempt to include.

1. Being a pharmacy students' edition, it should contain—
   (a) All famous songs connected with colleges, universities and similar institutions;
   (b) Original student numbers, a distinguishing feature of the product being that well-known brand of cynicism, dry wit and keen observation skilfully disguised in an innocent and amateurish vehicle;
   (c) Anything with a distinctive laboratory or drug store flavour.
2. Being a national edition, it should contain—
   (a) A fair percentage of Australian items;
   (b) Songs that shed light and laughter on Australian traits and traditions.
3. Generally—
   (a) Anything else in verse form, traditional or modern (don't knock the rock) which will provide interesting and/or amusing reading;
   (b) Should be written in English, Scottish, Australian, Latin or French tongue (Dutch, German, Russian, etc., are not really acceptable).
   (c) Whenever possible, the accompanying title of the music to which they may be sung specified.

If in doubt ask any ex-congressite. If you know of any song book which has this type of material please send me information which will enable me to purchase one. All suggestions, entries, etc., to be sent to

P. L. Hickey, Cr. Maxwell Street and Dodwell Lane, New Farm, Brisbane, Queensland.

TASMANIAN PHARMACY STUDENTS' ASSOCIATION

Student activities in Tasmania are currently at a standstill, as everyone prepares for their November appointments with the examiners. However, the future is not completely uninteresting, as several outings have been planned for the after-exam. period, including day trips to Marion Bay, Port Arthur and Hastings Caves. Also, there will be quite a round of parties, at which we can either celebrate or drown our sorrows—depending on the views of the examinees.

The annual dinner will wind up T.P.S.A.'s activities for the year.

Several interested bods are at present doing research into the subject of travelling to Western Australia as cheaply as possible, with Congress in Perth in mind. We hope to have a good representation from Tasmania.

So long everyone—happy swotting!

SYDNEY UNIVERSITY PHARMACEUTICAL STUDENTS' ASSOCIATION

Despite the nearness of exams., the committee of S.U.P.A. has been quite active. During the past weeks various functions have been held.

One of the most beneficial of these was a lecture on antibiotics to materia medica students by a research worker from Parke, Davis & Co. Ltd.

Visits were made to the factories of B.W. & Co. and P.D. & Co. Many thanks to these companies for their goodwill and generosity.

S.U.P.A. has now firmly established itself in its new office and provides very good service to the students every lunch hour. We will take this opportunity in wishing all the best of luck in the approaching exams.

A barbecue is being arranged for third term. Start planning now for a glorious time in Perth for the N.A.P.S.A. Congress in January. See your class reps. for further details.

ADELAIDE UNIVERSITY PHARMACEUTICAL STUDENTS' ASSOCIATION

During the first week of this term we hold our last official function until after "the long grind," and it took the form of a picnic-cum-football match-cum-barbecue dance. Many spectators (we estimated 320) congregated at the picturesque Mylor Oval in the Adelaide Hills to watch the annual "grudge" match of students vs. qualifieds. After some disagreement on the part of the goal umpires, the students emerged victorious, with the final scores 14.18 to 9.6. Refreshments for the players were provided by L. Macgraith on behalf of F. H. Faulding & Co. Ltd. and trophies awarded to best players, S. Starr and B. Currie were donated by Sterling Pharmaceuticals.

Those students who were fortunate enough to escape week-end work went on to Silver Lake for a barbecue and dance in the evening.

The next few weeks will see most of us endeavouring to burn the candle at both ends to make up for first-term efforts, so the South Australian students would like to take this opportunity of wishing prospective Ph.C.'s in all States the best of luck in the forthcoming examinations.

VICTORIAN PHARMACY STUDENTS' ASSOCIATION

On Sunday, September 14, about 30 pharmacy students and friends tried their skill (or rather, their luck) at the

A Touching Scene: Victorian Pharmacy Students Rehearsing for the 1958 "Follies." Left to right: Geoff Sussman, Pauline Lawrence, Nick Gelatis, Roger James, Len Levy, Bruce McNicoll, Bob Holland, Barry Kerr, Bob Fennell.

Mount Macedon Golf Links. It was a lovely day for golf on a pretty little course. Eighteen holes were played and the boys' section was tied by Neville Spielvogel, 4th year, and Geoff Belleville, 2nd year. Geoff also won

Group of Victorian Pharmacy Students rehearsing for the 1958 "Follies."

the least number of putts for the boys. Bob Fennell, 4th year, won the handicap.

Not many girls participated. That section and the least number of putts were won by Lorna Hicks, 3rd year, and the handicap by Marie Crawford, 2nd year. Some of the firms donated trophies and we hope to make this golf day an annual event. A barbecue followed, but it gets very cold on the mountain after dark, so we returned quite early.

Arrangements are in hand for the end-of-the-year ball, to be held at the Bambalina on Thursday, December 4. The theme for this ball is a "Weird Mob" ball, which allows plenty of scope for suitable attire.

We are hoping that some of our students will be going to Perth for Congress in January, as this should be a very interesting trip.
—Margaret Whittle, National Publicity Officer, 21 Beatrice Road, Dalkeith, W.A.

NASAL CATARRH IN HORSES

During autumn and winter there are often outbreaks of nasal catarrh amongst susceptible horses. These outbreaks usually occur in groups of horses recently brought together, or may follow the introduction of a horse from outside the property. The disease is not very serious, but may result in considerable loss of condition, rendering the horse unfit for work.

It is caused by infection with a very common organism called a *streptococcus*. One of this species causes strangles and also symptoms of sore throat and nasal discharge. Another streptococcus causes similar symptoms without, however, resulting in abscesses under the jaw, which is such a common feature of strangles.

The symptoms of nasal catarrh are related to an inflammation of the lining of the nose, throat and upper windpipe. From the nose there is a copious discharge which may be a thin, watery fluid or a thick, white or yellow, custard-like material. Coughing is often a prominent symptom and may be frequent and painful. During spasms of coughing, discharge may be blown from the nostrils. The head is often held out, and difficulty in swallowing is evident. There is usually a rise in temperature. Sometimes the lymph glands under the lower jaw swell up as they do in strangles, but they do not form abscesses. The affected horses may lose their appetites, not eating for a week or so.

Treatment

This condition is best treated with an injection of one of the modern antibiotics and the case should therefore be referred to a veterinary surgeon. However, some relief can be afforded by rubbing the throat with a mixture of table mustard and vinegar for about five minutes, and by giving an electuary made up of powdered camphor 2 parts, powdered liquorice root 4 parts, potassium nitrate 2 parts and extract of belladonna 1 part. The powders should be well mixed and then stirred into just enough treacle or honey to make a paste. A large teaspoonful of this smeared on the tongue three or four times daily is useful in relieving pain and coughing.

Treatment should include complete rest and an appetising, light and nutritive diet. On no account should the animal be force fed. Food should comprise fresh green feed, crushed oats, bran, and perhaps a little high class chaff. In cold weather, it may be necessary to rug the horse until it has recovered.
—From "The Agricultural Gazette of N.S.W.," June, 1958.

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REVISED LIST OF ANTIHISTAMINES

Official, Generic or Approved Name	Proprietary and Other Names
Antazoline HCl B.P., 1958	Antistine (Ciba); Histostab (Boots).
Bromodiphenhydramine HCl	Ambodryl (P.D.); Bromazine.
Buclizine HCl	Vibazine (Pfizer); Longifene.
Chlorcyclizine HCl B.P., 1958	Di-paralene (Abbott); Histantin (B.W., Eng.); Perazil (B.W.).
Chlorothen Citrate	Andrews; Tagathen (Lederle).
Chlorpheniramine Maleate B.P.C. Supp., 1957	Chlor-Trimeton (also Repetabs) (Schering Corp.); Piriton (also "Duolets") (A. & H.); Chloroprophenpyridamine Maleate.
Clemizole	Allercur.
Cyclizine HCl B.P.C. Supp., 1957	Marzine (B.W.).
Dextro-chlorpheniramine maleate	Polarmine (Schering Corp.)
Dimenhydrinate B.P.C. Supp., 1957	Andramine (Andrews); Dramamine (Searle); Menhydrinate (Toppin); Travamine (G.P.); Prosamine (Prosana).
Diphenhydramine HCl B.P., 1958	Benadryl (P.D.).
Diphenylpyraline	Histryl Spansules (S.K. & F.).
Doxylamine Succinate	Decapryn (Merrell).
Halopyramine	Synopen (Geigy).
Isothipendyl	Nilergex (I.C.I.); Theruhistin.
Meclozine HCl B.P.C. Supp., 1957	Ancolan (B.D.H.); Bonamine (Pfizer).
Mepyramine Maleate B.P., 1958	Anthisan (M. & B.); Neo-Antergan (Merck); Pyranisamine; Pyrilamine.
Methaphenilene HCl	Diatrin (Warner).
Methapyrilene HCl	Thenylene (Abbott); Histadyl (Lilly); Thenylpyramine.
Phenindamine Tartrate B.P., 1958	Thephorin (Roche); Thephorinets (Roche).
Promethazine HCl B.P., 1958	Phenergan (M. & B.).
Promethazine Chlorotheophyllinate B.P.C. Supp., 1957	Avomine (M. & B.).
Prophenpyridamine para-aminosalicylate	Avil; Avilettes (Hoechst-F. & Mc.).
Pyrrobutamine	Pyronil (Lilly).
Thenalidine	Sandosten (Sandoz); Thenophenopiperidine.
Thenyldiamine HCl	Thenfadil (Winthrop).
Thenylpyramine HCl (see Methapyrilene)	
Thonzylamine HCl	Neo-Hetramine (Wyeth).
Tripelennamine HCl	Pyribenzamine (Ciba).
Triprolidine HCl	Actidil (B.W.).

Andantol (Homburg) and Soventol (Knoll A.G.) have not yet been allocated Approved Names.

The Women's Section

Correspondent: Miss A. K. Anderson

At our last general meeting, held at the College of Pharmacy on October 2, Miss Keogh greeted members and friends, giving a special welcome to Miss Elsie McLachlan, who had delayed her return to Sydney, where she has been living for a number of years, to attend our meeting. Miss Keogh then introduced the guest speaker, Mr. Eric Westbrook, director of the National Gallery.

Beginning his talk, "The National Gallery and You," Mr. Westbrook told us the history of the Gallery, which celebrates its centenary very soon, and consists of various sections—the Library, the National Museum, the Museum of Applied Science and Technology, and the National Gallery.

The Victorian Gallery is not an educational gallery, but exists primarily for pleasure. Alfred Felton was the man who completely changed the nature of the gallery. By his endowment, known as the Felton Bequest, works of art from all parts of the world have been acquired throughout the years—the best in paintings, china, silver, rugs—until now our gallery is the finest in the Commonwealth and has a world-wide reputation.

Mr. Westbrook has great plans for the gallery when the new building is completed. Under existing conditions only a very small percentage of the treasures can be shown, but he hopes to have permanent settings for most of the finest pieces in the new gallery, so that everyone can know and enjoy them. We would also like to see the gallery open each evening, so that people who are unable to make any use of it during the day would have the opportunity of visiting the gallery more often and so be able to enjoy the beautiful objects it contains.

At the conclusion of his talk, Mr. Westbrook answered several questions, and was then thanked, on our behalf, by Mrs. Harkins, for his most delightful and interesting talk.

During the month the committee entertained **Miss Margaret Murrell** to dinner at the Ritz, to wish her well on the occasion of her approaching marriage. Miss Murrell has been a member of our association ever since she qualified, and has been a committee member for some years. Miss Keogh presented Miss Murrell with a charming antique bedroom clock, on behalf of the association, with all our good wishes for her future happiness.

A **theatre party** to "Free as Air" has been arranged for November 13 and Miss MacGillivray, FU7528, may be contacted for tickets.

ASSOCIATION OF WOMEN PHARMACEUTICAL CHEMISTS OF QUEENSLAND

At our September meeting we were privileged to have Miss Siddons, from a London cosmetic company, as our guest.

A very attentive audience of over 50 members and friends listened to instruction on skin care and watched a demonstration make-up. As a small token of our appreciation Miss Reuther presented Miss Siddons with a beautiful bouquet of daffodils and freesias, with which she was very thrilled.

A delightful supper concluded a very enjoyable evening.

THE WOMEN PHARMACEUTICAL CHEMISTS' ASSOCIATION OF SOUTH AUSTRALIA

On September 23 at the Lady Symon Lounge, Mrs. E. Lester opened our meeting by welcoming members and their guests. It was reported that a most successful theatre party for "The Shifting Heart," performed in the newly completed University Union Hall, had been held during the previous month. This was the first theatre party to be arranged by our association, and it is hoped others will be arranged in the future.

Remits for the Federal Conference were discussed. Members were reminded of the Christmas dinner, which will be held at "The Copper Kettle" on December 2.

Mrs. Lester introduced as our guest speaker Miss Mary Smith, who is very well known in Adelaide as a child psychologist. Miss Smith told us of aspects of her work as a member of the Child Guidance Clinic at the Adelaide Children's Hospital. This clinic does valuable work helping children with emotional problems. Faulty attitude in the parent is often the problem the clinic has to overcome to help straighten out the child's difficulties. The clinic consists of a psychiatric social worker, a psychologist and a psychiatrist, who work together on the cases. Treatment of patients by the clinic varies from a few weeks to years.

As the majority of those present at the meeting had children in the pre-school age group, Miss Smith told us of behaviour problems frequently found in the younger child. She told us how these supposed problems are most often only part of the normal physical and mental development of the growing child. In normal circumstances there is little to worry about, as these problems of growing up disappear, given time.

At the conclusion of her talk, Miss Smith answered specific problems put to her on such subjects as dummies, nail biting and the working mother.

Mrs. S. Symonds proposed a vote of thanks to our speaker and the meeting moved to the adjoining coffee lounge for supper.

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AND AS THE POTASSIUM SALT EQUIVALENT TO

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Readers' Views

To the Editor.

These columns are open for the free discussion of any matter of general interest to Pharmacists. Letters under a nom de plume may be published; but each correspondent must furnish his name and address as an evidence of good faith. It must be distinctly understood that the opinions expressed by our correspondents are not necessarily endorsed editorially.

HELP IN MERCHANDISING

To the Editor.

Sir,—May I per medium of your columns congratulate Mr. R. G. Ross and Mr. C. B. Watson, authors of "Principles of Successful Selling in Retail Pharmacy." They have rendered magnificent service to pharmacy as a whole and to chemists individually by their publication. The ideas involved, although basic, have been most refreshingly presented, and would represent one of the most forward steps in pharmacy merchandising in recent years. I would like to see the publication used as a text book through specially organised training schools in each of the States if it is practical.—Yours, etc.,

J. I. FINN, Ph.C., M.P.S.

Hunter's Hill, N.S.W.
October 24, 1958.

MORE ABOUT "PRESCRIBER'S PLACEBO" (JUNE 30)

A sally from Mr. G. Gilchrist, of Invercargill, N.Z.—

Imperial measures—we love them—
Hurrah for the pint and the grain.
Prescriber's prescriptions
Cause nervous afflictions,
No wonder the chemists complain—
Forget matters metric
Re—med.—or obstetric,
But teach them in writing that's plain.

Overseas News

GREAT BRITAIN

LONDON, October 10, 1958.

The British Pharmaceutical Conference

From the pharmacists' angle September may now be regarded as the Conference month. At one time the British Pharmaceutical Conference was held in June, July, August or September, but since the war it appears to have moved to the latter month, partly because the universities and colleges are on vacation then, and also because summer resorts are less willing to accept a large influx of visitors with a specialised interest during the period when normally holidaymakers are around. The Conference has now reached such dimensions that accommodation may be required for about 1,000 individuals, and halls may not be available in the summer or early autumn. Of course the latter considerations do not apply to many inland cities, but the availability of academic staff is probably an important factor. This year's Conference was at Llandudno, a pleasantly situated coastal resort in North Wales. The Chairman was Dr. G. E. Foster, who is Chief Analyst and Head of the Control Department of Burroughs Wellcome and Company's factory at Dartford. His chairman's address on "Modern Analytical Chemistry in the Service of Pharmacy and Medicine" will be published in this journal.

Visitors from the Commonwealth were less numerous than in recent years. The only visitor from Australia was Mr. D. M. Dunn, a former member of the Pharmacy Board of New South Wales. Mr. Dunn told your correspondent's colleague at the Conference that he was thoroughly enjoying his visit and that the problems and questions discussed at Llandudno, particularly that of apprenticeship, were very similar to those existing in his home country.

A Familiar Pattern

The Conference programme followed the pattern which has now almost become a tradition, first, after the opening session and the chairman's address there are science sessions. These sessions run throughout the week, but they are intermingled with professional sessions and a symposium. The social side is also more or less stereotyped. On the first evening there was a civic reception and this was followed later in the week by a banquet and a ball. There was a half-day excursion to Snowdonia, which was so well attended that the Conference visitors had to be divided into two sections, which took the route in opposite directions. As George Borrow wrote a century ago in his "Wild Wales," "Perhaps in the whole world there is no region more picturesquely beautiful than Snowdon, a region of mountains, lakes, cataracts and groves, in which Nature shows herself in her most grand and beautiful forms." Finally, sportsmen and women were offered their traditional fare of golf and tennis tournaments and a bowls competition.

The New Chairman

At the closing session, Mr. H. Treeves Brown was appointed chairman for the 1959 Congress, which will be held at Bournemouth. The new chairman is secretary of the British Drug Houses Ltd. Mr. Treeves Brown was originally a north countryman, but has been in the south of England for many years. He was on the scientific staff of the British Pharmaceutical Codex before going to

Glaxo Laboratories and then on to his present company. He has also been a joint secretary of the Conference for a number of years; until his elevation he was honorary treasurer.

Post-Graduate Training

The first professional session was concerned with the training of post-graduate students, and the topic was introduced by Dr. J. C. Parkinson, who, as head of the Pharmacy Department at the Brighton Technical College, took the academic viewpoint, and by Mr. G. T. Espley, who concentrated on the retail problem today. The arguments seemed to be based on the necessity for pharmacists ploughing back something into their profession. After graduates went first to other spheres of pharmacy there would be few recruits for the retail, and eventually there would be no purchasers of existing businesses. Mr. Espley also mentioned relationship with with professions other than medicine, e.g., the lawyers and accountants with whom the pharmacist would eventually have dealings. Although the business curriculum in the new syllabus would include some rudimentary approach to these problems, it was likely to be in the hard school of experience, either during or after his pupilage, that the apprentice would gain his knowledge. Assistance in this sphere from the apprentice-master would help the young man later, but he should be made aware of the "Code of Ethics," and the fact that it had been evolved for the improvement in status of the whole profession. From the body of the hall conflicting views were put forward on the advantages of post-graduate apprenticeship as against training before college. One former Conference Chairman, Mr. H. Humphreys Jones, maintained that the single-handed pharmacist had no time to teach an apprentice during the one-year period of training. The trainee should pay the pharmacist rather than receive about £9 per week. Students who took their practical work first were in a malleable condition, and they were brought into a real world, whereas the post-graduate student had never been in any but a fanciful world, where he had had no responsibility In dispensing in a shop somebody's life was at stake.

Dr. H. Davis, Chief Pharmacist to the Ministry of Health and formerly a teacher and hospital pharmacist, as well as an examiner of thirty years' standing, said that it was impossible to come down in favour of one side or the other. Personally he could argue either way.

The Presentation of Dispensed Medicines

The second professional session was concerned with the presentation of dispensed medicines. Papers were given by Mr. G. T. M. David, a practising pharmacist, who is also Vice-Chairman of the National Pharmaceutical Union, and by Mr. A. R. G. Chamings, Manager of Ciba Laboratories. Mr. David took the view that the prescriber's views must be paramount, but doctors were divided in their opinion whether original containers should be used for proprietaries, and whether the product should be given its proper name or labelled in the traditional manner. Unfortunately since the National Health Service began the choice of containers had been governed very largely by financial considerations. In the present prescription pattern about 42 per cent. of medicaments consisted of tablets or capsules, and most of these were supplied in folding carton-type containers. Certain tablets must be dispensed in containers which prevented access of moisture and some drugs must be protected from light. He believed there was a future for the plastic container and cheap expendable containers specifically designed for the product might be available by mass production methods during the next ten years, so that a pharmacist could look forward with confidence to a time when cost was one of the least important factors in the choice of containers. On the whole medical men disliked their patients knowing the name and nature of the medicines prescribed. Manufacturers like advertising the original pack dispensing which might stimulate over-the-counter sales, but it was most important to differentiate between those suitable for such sale and other medicaments. On the other hand, some manufacturers went to a lot of trouble to assist the pharmacist by making the labels easy to remove with liquid preparations packed in bottles of convenient size and paper sleeves on ointment.

Mr. Chamings was in favour of Continental and American methods of handing over the entire product in the original container, although manufacturers might require to re-examine their packaging methods with a view to the development of appropriate units. He summarised his views as follows:—

(1) Although in this country the proportion of these products prescribed is today only of the order of 50 per cent. of the total prescriptions, it will inevitably increase. This is in conformity with the experience of other countries, and especially of the North American Continent and Western European nations, where the figure now exceeds 90 per cent.

(2) The international character of modern medicine renders it highly desirable that patients, so many of whom are now widely travelled persons, shall receive their prescriptions for these new products in the same form substantially in all countries. If this be valid how much more important it is that the finished article shall not markedly vary as between one pharmacist and another, in the same street or even in the same pharmacy.

(3) The increasingly wide range of forms of administration and of presentation of new therapeutic agents demands the use of specially-adapted containers.

(4) The care with which the manufacturer may pack and present his product can easily be nullified in the transfer of the product from container to container and the patient may well, on occasion, be suspicious of such a preparation, particularly where he has previously had it in the manufacturer's unit.

(5) The economics of the presentation of the manufacturer's package deserves serious consideration: (a) much of the obsolete broken bulk on the pharmacists's shelves would be obviated; (b) the time of the waiting patient and that of the pharmacist spent in dispensing medical specialities would be substantially reduced; (c) some duplication of the containers of manufacturers and pharmacists would be eliminated.

(6) The pharmacist is becoming increasingly aware of the fact that complete obliteration of the nature and origin of the product is often well-nigh impossible.

(7) A substantial proportion of therapeutic agents prescribed by the doctor are, by their very nature, also available to the public by direct over-the-counter sales.

In his reply to the debate Mr. David said that they had to reconcile themselves to an ever increasing amount of original pack dispensing because doctors were increasingly demanding it. Manufacturers should direct themselves to supplying packages that could be suitably dispensed by pharmacists. He thought that the French dispensing, with the chemist's label stuck over the manufacturer's label, was unsightly.

During the course of the debate Mr. T. Heseltine, Past-President of the Society, said that the Council should give a lead to the 20,000 pharmacists who were dispensing daily. Having travelled widely, and in France and India, he always returned convinced that the finest dispensing was done in Britain.

The question has again been brought up in the "British Medical Journal," this time by Dr. R. S. Inch, who is a director of Bayer Products Ltd. He suggests that some pharmacists complain that the industry is infringing their professional status and he thinks that it is under-

Deep roots . . .

In the highly specialised sphere of drug growing, Ransom's roots go deep. Founded more than a century ago, the Company can claim a vast fund of experience that has long been acknowledged around the world. And Ransoms is a truly *progressive* organisation . . . always seeking still better methods of cultivation . . . always developing still newer strains of medicinal plants on the Company's drug-growing farms at St. Ives. Ransoms look energetically to a future in which drugs and galenicals will continue to fill a vital role, for nature often provides the best measures against diseases, despite today's use of synthetic drugs.

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it's going to be a SKOL summer

Backed by an extensive summer advertising campaign **SKOL** *will help you to sunnier profits*

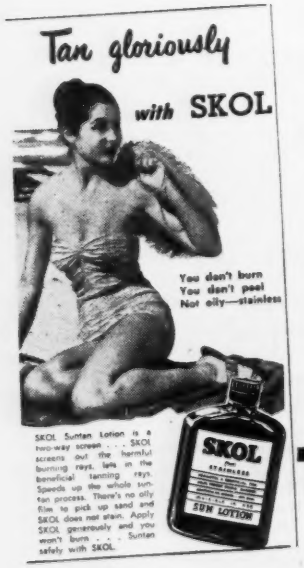
SKOL really does a grand job of sunburn protection. SKOL is NOT oily and will NOT stain. It gives a golden tan without burning . . . that's why SKOL sells.

SKOL advertising will help you sell

SKOL suntan lotion is being nationally advertised in weekly magazines, over the radio, on posters and television. This advertising is designed to carry SKOL's good news to the family, for SKOL is safe and is equally effective in protecting baby and grandpa from sunburn.

Take advantage of this summer sales drive and stock now for customers' needs. An attractive point of sale showcard with dispenser is also yours for the asking.

Remember . . . if you purchase 6 dozen assorted sizes through your usual wholesaler you get a 5 per cent. discount.


Tan gloriously
with SKOL
You don't burn
You don't peel
Not oily—stainless
SKOL Suntan Lotion is a two-way screen . . . SKOL screens out the harmful burning rays, lets in the beneficial tanning rays. Speeds up the whole suntan process. There's no oily film to pick up sand and SKOL does not stain. Apply SKOL generously and you won't burn . . . Suntan safely with SKOL
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standable that there should be an undercurrent of disagreement between dispensing pharmacists and the industry, as the expansion of the latter had resulted in an inevitable loss of prestige and demonstration of skill for the former.

"The Pharmaceutical Journal," in an editorial, points out that there are less subtle grounds for disagreement to which Dr. Inch makes no reference. Among them are the manufacturer's variations on a therapeutic theme, which lead to the "accumulation on the pharmacists's shelves of a growing flotsam reflecting the prescription modes of yesterday."

Legal History in the Making

On October 6 a new aspect of legal history came into being when the Restrictive Practices Court sat for the first time. The members of the Court consisted of three judges and five laymen, and pharmacy had its own particular niche as the first case for hearing was that of the Chemists' Federation. The Chemists' Federation admits manufacturers and products which are acceptable to the ethical standards of the Federation, and the manufacturers agree to sell their goods through chemists only, or to wholesalers on an approved list. The object of the case is to have this agreement recognised at Court and registered; broadly speaking, it is necessary for the Federation to show that their restrictions are in the public interest. It is expected that the hearing of the case will take around three weeks as there is a huge volume of depositions to be examined, and a large number of witnesses will appear before the Court. Among those the Court has already heard are Mr. R. H. Kemp, Secretary of the Federation, and Mr. J. Wright, Deputy Secretary of the National Pharmaceutical Union, who, in the course of evidence, said that in 1953 a representative sample showed that there was an average net loss of £152 on National Health dispensing and an average net profit of £355 for other trade, thus giving the chemist an average net profit of £203 on his combined trade. Even allowing for £700 as shown by the survey, the witness did not consider this a reasonable award for the pharmacist. Since 1953 gross profit had gone down. Dr. B. A. Young, a Privy Council nominee on the Council of the Pharmaceutical Society, told the Court that he attached great importance to the discipline exercised over pharmacists by the Society and the traditional standards of chemists. Directives of the Society dealing with harmful drugs and laying down moral standards of behaviour were not available to the ordinary shopkeeper, who was not subject to them. Chemists should sell medicines and it was not proper for this purpose to distinguish between different kinds of medicines.

[See later reference in "The Month"—Ed.]

Basic Buying Quantities

Last month's "News Letter" quoted a criticism of the Public Accounts Committee on the basic price paid to contractors in the Drug Tariff, alleging that contractors could receive as much as 14 per cent. "hidden profit" on these prices. Since then it has been disclosed that the Ministry has been pressing both the Association of Pharmaceutical Industry and the Chemist Contractors' Committee on the prices and quantities. The Ministry have decided that buying quantities of the most frequently prescribed medicaments should be revised, and they proposed that there should be readjustment in the quantities of no less than 102 items. Some of these are still under discussion, but as from October 1 the basic quantities were revised. Some examples on which the chemists' buying habits are supposed to be based include citric acid 1 kg., concentrated infusion of valerian 1 litre, menthol 100 g., syrup 2 litre, 50 mg. acid ascorbic tablets 1000, and for both 100 mg. and 200 mg. the quantity is 500 tablets. Compound codeine tablets are assumed to be bought in 5,000 lots, and both digitalis and digoxin tablets in 1,000 lots. The same number applies to iron gluconate. Zinc ointment with castor oil is based on 1 kg. lots. In all the 42 drugs only citric acid, glycerin, light magnesium carbonate and sodium bicarbonate are basic chemical ingredients, but menthol, peppermint oil and olive oil are also included, so that broadly the change has been in manufactured galenicals and the chemist who undertakes his own small-scale manufacture will not be adversely affected.

Pricing Prescriptions

Since the service began over ten years ago one of the contractors' continuous grumbles has been that each prescription is not priced individually, but for nine months of the year only 20 per cent. of these with an ingredient value of under 5/- are priced, and the remainder in this group is averaged. Many attempts have been made by the contractors to obtain a return to the old method, but on each occasion the Ministry have taken the attitude that individual pricing would entail too great expenditure of both manpower and money. At the end of September, however, a joint deputation from the chemist contractors and the Joint Pricing Committee for England succeeded in interviewing Mr. Derek Walker-Smith, the Minister of Health. He told the deputation that he would bear all the representations closely in mind when an investigation into pricing methods by the Treasury had been completed. The members returned with the impression that on this occasion the possibility of a return to full pricing would not rejected out of hand, but would be examined objectively.

Higher Prescription Levy Suggested

During the Parliamentary recess the political parties hold their annual conferences, usually at a seaside resort. At the Conservative Party's Local Government Conference, Sir Keith Joseph, M.P., suggested that the prescription levy of 1/- should be doubled. He argues that Britain is "over-free-drugged." No one, in his opinion, battles to reduce the cost of drugs, and the citizen expects and often gets more in quantity and in content than he really needs. Sir Keith doubted whether a committee could find a way to reduce the drug bill, and if medical progress is to be made there is not much, if anything, to be cut from proprietary drugs, which account for 30 per cent. of the total cost. In all, 40 per cent. of the drug bill is for chemists' remuneration and expenses, and accordingly the only large economy must come from reducing the number of prescriptions or the cost of each to the taxpayer. By doubling the levy about £10 million might be cut from the Health Service bill without any effect on health. This sum could be used for hospital buildings or providing a chiropody service as well as other ancillary workers, or better salaries for doctors.

Memorial to G. A. Mallinson

A memorial plaque has been unveiled at the N.P.U. headquarters to the late Mr. G. A. Mallinson, who was secretary of the Union from 1921 to 1949, and who died five years ago. At the unveiling, Mr. H. G. Moss, Chairman of the N.P.U., said that Mr. Mallinson probably did more to make retail pharmacy the strong unified force that it was than anyone had ever done before or was likely to do in the future. His vision and enthusiasm had been largely instrumental in bringing the N.P.U. into being, his efforts were so successful that the Union was able to claim that its membership was 98 per cent. of its full potential, and this was on a purely voluntary basis. Among the other benefits Mr. Mallinson had brought to retail pharmacy was the Chemists' Friend Scheme, the Chemists' Sickness and Provident Fund, the Chemists' Mutual Insurance Society and the Business Purchase and Guarantee Fund. Probably the toughest job was to fight as a member of the negotiating committees for a decent remuneration for the pharmacist in what was originally the N.H.I. scheme and was now the N.H.S.

Trade Notes

BOOTS' BONUS OFFERS

Boots Pure Drug Co. (Aust.) Pty. Ltd. has notified the following bonus offers in force until December 31, 1958—

Mycota Cream—two free in each dozen (that is, charge 10, deliver 12).

Mycota Powder—two free in each dozen (that is, charge 10, deliver 12).

Mylol—one free in each half-dozen (that is, charge 5, deliver 6).

SMITH KLINE & FRENCH LABORATORIES (AUSTRALIA) LTD.

Mr. R. F. Wetton

Mr. R. F. Wetton, previously with Smith Kline & French in England, arrived in Sydney recently to take up his appointment as Manager of the newly formed Professional Service Department.

This department will commence active operations in the near future. Mr. Wetton spent some time at the head office in Philadelphia before coming to Sydney.

MONPHYTOL

A new treatment for tinea and chronic paronychia is now available in the form of Monphytol, a new colourless paint, manufactured by the Laboratories for Applied Biology, London, which also manufacture Cerumol.

Monphytol, which is being promoted ethically in Australia by Salmond & Spraggon (Aust.) Pty. Ltd., is claimed to have marked advantages—rapid relief of symptoms; unpleasant burning, throbbing or itching subsides; inflammation resolves—normal anatomy restored; reinfection prevented; colourless, not messy in use.

For treatment of chronic paronychia see "Brit. Med. J." (1955) 2, 1623.

The pack is an 18 c.c. bottle, fitted with a brush for simple application.

Prices—To chemist, 10/- per bottle; to patient, 15/- per bottle, plus dispensing fee.

The agent advises that Monphytol may be counter prescribed.

EARLY POSTING OF CHRISTMAS MAIL

During the pre-Christmas period the Post Office is required to handle exceptionally heavy mail loads, and the co-operation of the public is sought each year to secure the early posting of gifts and greetings.

The success of the "Post Early" campaign can be furthered by the many thousands of people associated with the great variety of business establishments, and it is asked that calendars, catalogues and advertising material be posted as early as possible in December and not later than December 10.

Great assistance would be rendered to the Postal Department if large postings of commercial mail could be separated into bundles for city, suburban, country and interstate destinations, securely tied and handed in at a post office counter rather than being placed in the usual posting receptacles.

GLAXO LABORATORIES (AUST.) PTY. LTD.

GlucoDin Prices Increased

Due to increased cost of raw materials, the company has been obliged to increase the prices for its GlucoDin products.

The new prices, which came into effect on October 1, are as follows:

	Trade Price	Retail Price
GlucoDin, 1 lb. pkts.	42/9 dozen	4/9 each
3 lb. pkts.	114/9 dozen	12/9 each
Veterinary—		
Glucose D, 50 lb. bags	148/- each	197/6 each

Additions to Efcortelan Skin Lotion Range

Efcortelan—		
Skin Lotion, 0.5% 10 ml.	9/- each	13/6 each
Efcortelan with Neomycin—		
Skin Lotion, 0.5% 10 ml.	12/- each	18/- each

Predasin Tablets

Glaxo Laboratories (Aust.) Pty. Ltd. now has available Predasin Tablets, each tablet containing 0.5 mg. prednisolone and 300 mg. (approx. 5 grains) aspirin.

Predasin Tablets are packed in bottles of 50, and prices are as follows:

	22/6 each	33/9 each

FAULDING SOCIAL CLUB BALL

Recently the Faulding (N.S.W.) Social Club held their Annual Ball at the New Commodore Ballroom in Sydney.

Over 300 members of the staff and their friends spent a very bright evening dancing in the gaily decorated ballroom.

Left to Right: Mr. J. Warner (Sales Promotion Manager), Mrs. G. V. Scammell, Mr. G. V. Scammell (Director), and Mrs. W. G. Clancey.

Mr. G. V. Scammell, Director of Faulding Sydney, welcomed the guests, and spoke on the fine spirit of comradeship evident throughout the Faulding organisation.

The ball was voted by all members of the staff and their friends present as being one of the best yet held by the social club.

Adelaide, Too

On October 1, over 350 guests of the Faulding Social Club in Adelaide danced to the music of Alf Holyoak's band beneath a variety of Spring butterflies, daisies and lambs. The Burnside Ballroom was the setting of this social highlight. Many pharmacist friends of the company attended and the official party was received by Mr. E. Hume Phillips, Chairman of the Social Committee, and Mrs. Phillips.

TABLETS *by* ROTARY

The following range of hospital formulae and standard pharmacopoeia tablets is available from Rotary Tableting Corporation Pty. Ltd. at net bedrock quotations:—

*Aminophylline B.P.
Aminophylline Compound
Amphetamine Sulphate B.P.
Amylobarbitone Sodium B.P.C.
A.P.C. Tablets (A.P.F.)
A.P.C. with Codeine
Ascorbic Acid B.P.
Aspirin B.P.
Calcium Gluconate
Codeine Compound B.P.
Dextro-Amphetamine Sulphate
Dienoestrol B.P.
*Digitalis B.P.
*Ephedrine Hydrochloride B.P.
**Ferrous Gluconate B.P.
*Folic Acid
Hexoestrol B.P.
**Isoniazid B.P.
Nicotinic Acid B.P.
*Para-Aminosalicylate Sodium
Pentobarbital Sodium
**Pentobarbital Compound
Pethidine B.P.
*Phemitone B.P.
Phenobarbitone B.P.
*Phenytoin Soluble B.P.
Pyridoxine Hydrochloride B.P.C.
Quinalbarbitone Sodium B.P.
Reserpine B.P.C.
Riboflavine B.P.
Saccharin Soluble B.P.
Sulphacetamide B.P.
*Sulphadiazine B.P.
*Sulphadimidine B.P.
*Sulphaguanidine B.P.
*Three Sulphonamides
Theobromine Compound
*Thyroid B.P.
Vitamin B1 B.P.
Vitamin B Group
Vitamin B Group Forte
Vitamin E
**Vitaminorum B.P.C.

***These tablets may be prescribed FREE to the patient under the National Health (Pharmaceutical Benefits) Regulations to the National Health Act, 1953.**

****Available under Pensioner Pharmaceutical Benefits.**

ROTARY TABLETING CORPORATION PTY. LTD.

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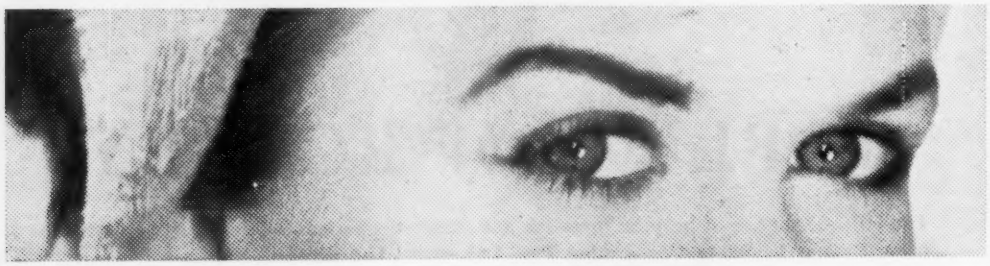
Look over these money-making facts



Pond's Face Creams have the cream of the market

33.2% share of unit sales in 1957 was almost 3 times the share of the nearest competitor — and Pond's sales continue to climb in 1958.

Plus! more advertising support than any other brand on the market.

- Large, dramatic 12″ x 5 cols. press advertisements right through the year. A total of 32,787,584 advertising impressions across the nation.
- Exciting, glamorous 1 minute television commercials with an average of 245,000 persons in Sydney and Melbourne viewing.

Remember! Pond's Face Creams come from the largest cosmetic house in the world and outsell all other brands.

Pond's Promotions are building an even bigger market. Make sure you get your share! Stock all sizes—display all sizes—and always recommend Pond's Face Creams.

C944

ALLEN & HANBURYS (A'ASIA) LTD.

Allen and Hanburys' products first were on sale in Australia just before World War I; manufacturing commenced in 1946 at a modern factory at St. Marys. In 1958, a new, specially designed and built A. and H. factory of 50,000 square feet is in operation.

The building consists of two main blocks comprising office section and factory section joined by central amenities block. The factory section is divided into production, packaging and storage areas, with sterile air-conditioning in those areas which require it. It has also a separate area for the manufacture of the company's surgical products, completely insulated from the rest of the factory.

The address of the new factory is Plough Court, Duffy Avenue, Thornleigh, N.S.W.

NEW SELF-SERVICE DISPENSER FOR MODESS BELTS

A revolutionary change in package design for its Modess Belt range has been made by Johnson & Johnson Pty. Ltd.

A highlight of the new attractive packs is that they allow the key selling features of the range to be fully exploited.

"New Self-Service Dispenser for Modess Belts."

A fact that will also appeal to every retailer is that each pack has been designed specifically for self-service. This is in line with the modern trend that has and is proving that the self-service type of display and package stimulates sales.

This new and radical move is a step in the right direction to further popularise "on-the-counter" display for this type of product.

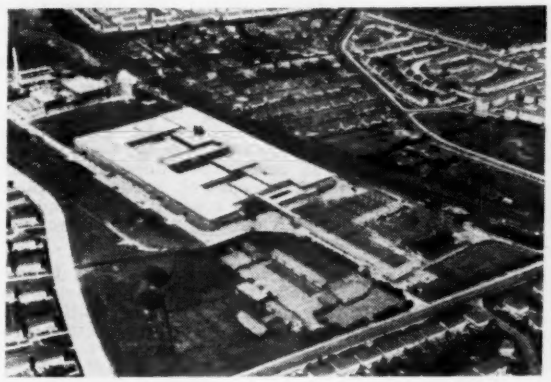
A new dispenser unit, designed at the same time as the packs, meets every requirement of sales appeal and for space saving. A colourful price and pack identification card attached makes this small dispenser into an attractive and appealing selling unit. Although small, it allows for a worthwhile stock of each type of belt to be displayed.

To allow the trade to take full advantage of this move, by the way of increased profits, special discount buys for retailers have been arranged by Johnson & Johnson Pty. Ltd.

A strong national advertising campaign to thoroughly condition and sell consumers on its new range of Modess Belts will shortly be launched by the company.

NEW WINTHROP-BAYER PLANT IN GREAT BRITAIN

The new factory recently completed by Sterling Drug Inc. at Fawdon, near Newcastle-on-Tyne, has been built to meet the need for greater production of its member companies' products, both for the home mar-

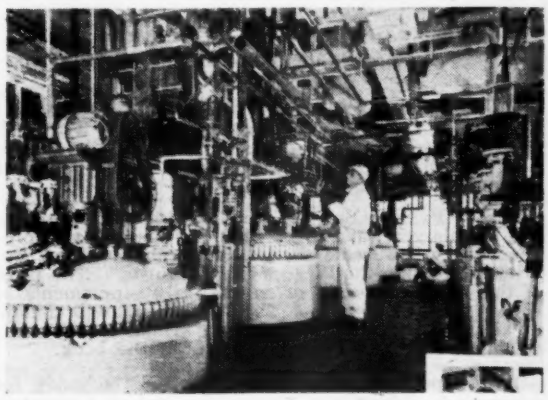


The factory from the air. The chemicals plant is at the top left, with the flat-roofed pharmaceuticals factory in the centre.

ket, and for sale overseas. The new laboratories operate under the name of Winthrop Laboratories Ltd., a name now well established in Australia also. The full manufacturing facilities are shared by Bayer Products, Scott & Turner Ltd., and the Chas. H. Phillips Chemical Co. Ltd.

The factory was built at a total cost of nearly £2 million, and employs 1250 people. The two main manufacturing units are the chemicals plant and the pharmaceuticals factory, which together cover an area of nearly 250,000 square feet. In addition to the main units there are a number of smaller units providing ancillary services, e.g., the tin box factory, and the various service departments, power plants, boiler houses, stores, workshops, etc.

The chemicals plant has two main sections, one synthesising "intermediates," and the other "fines"—products such as Levophed, Panadol and the X-ray con-



The maze of pipes, dials, valves, taps and gauges which control the feeding and discharging of the reaction vessels in the chemicals plant.

trast media Hypaque and Telepaque. There is also a pilot plant for small runs and trial processes. This department also houses process development and control laboratories where the quality of compounds is tested during all stages of manufacture.

The lay-out of the main pharmaceutical factory was designed after careful study by the company's works study team. It is arranged so that raw materials and packaging materials arrive at the north side of the building, and proceed in a direct line through the processing and packaging sections to the finished goods warehouses on the south side of the building.

The factory is divided into blocks by four light-wells. On the ground floor of the three-storeyed central block are services to which factory staff require direct access, e.g., personnel, medical, and wages departments; the first floor houses materials, control, production planning, buying, works study and control offices, and the top floor is devoted almost entirely to the control and product development laboratories.

The other main blocks of the pharmaceutical factory are concerned with tablets (this department being designed to granulate and compress about 65 million tablets a month), ampoules, liquids, and proprietary preparations.

PRESCRIPTION PROPRIETARIES CARD SERVICE

The 20 cards issued recently for the month of October dealt with the following products:—

A152	Achromycin V Pediatric Drops Aqueous.
A153	Anthipen.
B99	Bakramil Tablets.
B100	BCM Tablets.
C182	Calfluor.
F51	Fergon c C
F52	Femerital Tablets.
I34	Incremin.
K22	Katalan.
K23	Kofrene Cough Syrup.
L39	Lergas.
N92	Nesmida.
O42	Osadrin.
P225	Pamn.
P226	Pancrex.
P227	Precortisyl Skin Lotion.
P228	Precortisyl Skin Cream.
P229	Pepsilphen.
R50	Regitine.
S135	Scheriproct Suppositories.

"Prescription Proprietaries Guide For Doctors and Chemists"

Details of a new offer have been in the hands of Journal readers for some weeks past.

The "P.P. Card Service" will be discontinued at the end of this year, and in its place the Journal will produce every two years a new book, "Prescription Proprietaries Guide for Doctors and Chemists." The price of this book, including seven quarterly supplements, is £5/7/6 for the two years. The supplements will contain details of new products becoming available from time to time between the biennial issues of the book.

It is expected that the new book will be ready for despatch to subscribers towards the end of November. The new book will contain under the one cover the greater part of the information given in the "P.P. Card Service" since it was instituted in 1951, as well as additional items and other useful information.

P.A.T.A. OF NEW SOUTH WALES

Notified 10/10/58.

Chemists' Section: Additions

Martin & Co. (Surgical) Pty. Ltd.

Width	Retail		Wholesale doz.
2 in.	4/–	Handycrepe Crepe Bandages —Heavy Quality	32/–
2½ in.	4/9	Handycrepe Crepe Bandages —Heavy Quality	38/–
3 in.	5/6	Handycrepe Crepe Bandages —Heavy Quality	44/–
4 in.	7/9	Handycrepe Crepe Bandages —Heavy Quality	62/–
2 in.	3/–	Handycrepe Crepe Bandages —Medium Quality	23/9
2½ in.	3/9	Handycrepe Crepe Bandages —Medium Quality	29/9
3 in.	4/8	Handycrepe Crepe Bandages —Medium Quality	36/9
4 in.	5/11	Handycrepe Crepe Bandages —Medium Quality	46/9
2 in.	7/6	Durelastic Rubber-threaded Crepe Bandages	60/–
2½ in.	9/6	Durelastic Rubber-threaded Crepe Bandages	75/–
3 in.	11/6	Durelastic Rubber-threaded Crepe Bandages	90/–
4 in.	15/6	Durelastic Rubber-threaded Crepe Bandages	120/–
1 in.	0/8	Beiersdorf Selvedged Gauze Bandages	4/9
2 in.	1/1	Beiersdorf Selvedged Gauze Bandages	8/7
3 in.	1/8	Beiersdorf Selvedged Gauze Bandages	12/9

Parcel Advantage: £5 assorted parcel, 5% discount; £10 assorted parcel, 7½% discount.

General Section: Alteration

William R. Warner & Co. Pty. Ltd.

3/6	Sloan's Liniment	31/6

Notified 29/10/58

Chemists' Section: Alterations

Ansell Distributors (N.S.W.) Pty. Ltd.

5/11	Steadiflow Plastic Feeder	43/8
3/–	Steadiflow Plastic Replacement	22/1
5/11	Steadiflow Pyrex Feeder	43/8
3/–	Steadiflow Pyrex Replacement	22/1
1/6	Steadiflow Teats	11/–
	Steadiflow Caps and Discs	22/–
	Steadiflow Stericaps	11/–
9/–	Steadiflow Steriracks	66/–

Retail prices to come into force December 1, 1958.

BORAX AS CORROSION INHIBITOR

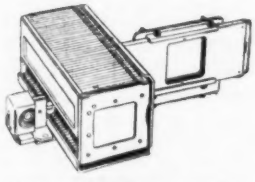
Research into the use of borax as a corrosion inhibitor in antifreeze solutions has contributed to the preparation of the draft British Standard No. CY(FHC)5100 published on May 8. The research has confirmed that in most conditions where ferrous metals are immersed in aqueous ethylene glycol antifreeze solutions, borax will protect them from corrosion almost indefinitely. It was also found that borax is effective in conditions which cause breakdown of other corrosion inhibitors. Laboratory tests as well as preliminary field trials have shown that borax in these solutions is a satisfactory corrosion inhibitor for typical aluminium alloys as used for cylinder heads and other parts of the cooling system of cars. Both borax decahydrate and pentahydrate are soluble in ethylene glycol, making additions of those materials a simple matter. The recommended quantity to be added is 3 per cent. by weight of ethylene glycol, but the amount is not critical and can be subject to some variation without adversely affecting the protective action.—"Chemist and Druggist," June 14, 1958.

Aldislite

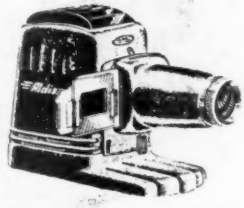
THE
JUNIOR
PROJECTOR
WITH
SENIOR
SALES

Finished in brilliant cream and maroon, the new Aldislite is semi-automatic. Second slide ejects first. The Aldislite takes the Airequipt Automatic Slide Changer and gives a full brilliant colour picture on the screen.

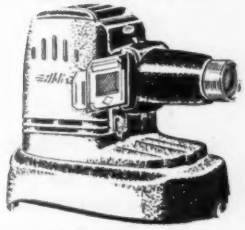
£14/11/-
(lamp 18/-)
(STRONG CASE, 49/6)



Airequipt Automatic Slide Changer, £6/15/-, with one magazine.



Aldis Aspheric 2, £29/15/-.



Aldis Aspheric 3, Blower cooled, £39/10/-.

The entire Aldis range is available through your usual drug wholesaler, or direct from the sole Australian distributors:

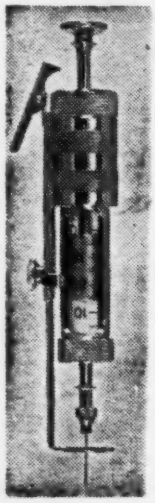
H. BLEAKLEY PHOTOGRAPHICS PTY. LTD.

BRANCHES IN ALL CAPITAL CITIES

SPICER

SELF-INJECTING SYRINGE

FOR THE CONSTANT USER OF HYPODERMIC SYRINGES



★ 2 cc. capacity.

★ Made from best quality brass with chrome finish.

★ Trigger-spring of phosphor-bronze.

★ Injection spring of stainless steel.

★ Barrel of finest quality Pyrex glass.

★ Its design makes it economical due to the fact that the only breakable part is the glass barrel, which is easily and cheaply replaced.

★ Two-year guarantee covers breakage not attributed to misuse. The guarantee does NOT cover the glass barrel.

AVAILABLE THROUGH LEADING WHOLESALE HOUSES

BRIMCO DISTRIBUTORS, Box 1988, G.P.O., SYDNEY

MANESTY

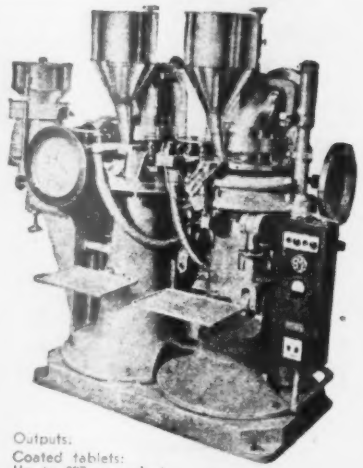
'DRYCOTA'

(Patents granted and pending)

COMBINED TABLET MAKING
AND
COMPRESSION COATING MACHINE
FOR
CONTINUOUS PRODUCTION

Positive Feeding: Exact Centering
Controlled Pressure
Automatic Core Check

*for the best coated tablets
*for the highest output of coated or uncoated tablets
*for continuous or interrupted coating
*for improved disintegration
*for the instantaneous production of round, capsule, or shaped coated tablets



Outputs:
Coated tablets:
Up to 897 per minute
Uncoated tablets: Up to 1794 per minute
Maximum diameter coated tablets: 13/16 in.
Variable Speed Drive, 2-h.p. motor
Self-contained dust extraction unit

NOW
4 MODELS WITH INCREASED OUTPUTS

Model	Coated tablets per minute
'500'	176/496
'600'	224/624
'700'	265/713
'900'	322/897

AND THE

'CENTERCOTA'

(FOR FEEDING PRE-MADE CORES)

Further details and our Experimental Service available on request from Department 22

MANESTY MACHINES LIMITED

SPEKE : Sole Australian Agents: J. L. Lennard, 29 Reiby Place, Sydney.

LIVERPOOL 24 : Victorian Representative: Apropack, 443 Little Collins Street, Melbourne.

ENGLAND : New Zealand: J. L. Lennard, 327 Willis Street, Wellington.

TABLET MACHINES : AUTOMATIC WATER STILLS - PUNCHES AND DIES : MIXERS : GRANULATORS

Commonwealth and State News

SOUTH AUSTRALIA

PERSONAL *and* GENERAL — *State News*

Members desiring publication of personal items of interest are invited to write or telephone details to the Journal Correspondent in S.A., Mr. E. F. Lipsham.

Mr. H. G. Collyer visited Port Pirie at the end of September to assist Mr. K. Oswald.

Mr. R. L. Jones returned to McLaren Vale for a week in October to allow Mr. D. Jones a short vacation.

Mr. J. Jelfs acted as locum for Mr. D. Goscombe for a fortnight at the end of the month.

Mr. W. Vivian went to Kadina in recent weeks to assist Mr. J. Burns.

In recent weeks **Miss Leffer,** of Mallala, visited Port Augusta to assist Mr. F. Strucher.

Miss Zeta Walsh, a member of the Council of the Pharmaceutical Society of S.A., is now in charge of the Pharmacy Dept. of Parkside Hospital.

Mr. V. Moriarty acted as locum in October for Mr. R. Phillips, manager of Webber's Pharmacy, King William street south.

Mr. M. Eckersley spent three weeks of Sept./Oct. at Birks-Chemists, Rundle street east, during the absence on holidays of the manager, Mr. E. Theel.

Mr. J. Jelfs acted as relieving manager for Mr. A. Doe, Fisk's Pharmacy, Glenelg, during the early part of October.

Mr. T. J. Lockett has registered in South Australia, and is now relieving manager for the Friendly Society Medical Association.

Mrs. H. J. Jamieson (nee Angus), of Victoria, joined the S.A. Register under reciprocal agreement early in October.

Mr. H. G. Collyer acted as relieving manager at both Hyde Park and Unley during October, for Mr. A. A. Russell during his absence in Melbourne for the annual meeting of the Federal Council of the Guild.

Mr. A. R. Williams has resigned his position as manager for Mr. H. N. Flaherty at Plympton, and purchased the pharmacy conducted by Mr. H. Salman. Mr. H. Knightley is now managing at Plympton.

Mr. R. A. Taylor, of South Road, Edwardstown, visited Nuriootpa at the end of October and beginning of November to allow Mr. A. Reusch a vacation. **Mrs. J. Bullock** (from W.A.) took over the management at Edwardstown during his absence.

Miss Jeanette Thomas sends a card from Kaiscastantern to say her road tour will finish in Europe late in September, when she planned to embark on the "Arcadia" to tour Spanish and Italian ports before starting work again in London late in October or early in November.

Bruce Thompson writes from London in the early days of October after his three months' tour of Europe, covering 13,000 miles. Getting back to London meant a halt for some days to rest before joining with another **D. B. Thompson** (of Hobart) in renting a flat. Work once more began when an offer from the Health Dept. of a job in Tooting Bar Hospital became too pressing to further decline the position of locum chief pharmacist in the 2300 bed mental institution.

ENGAGEMENT

Dean—Stock: The engagement is announced of Margaret, daughter of Mr. and Mrs. H. S. Dean, of North Perth, to Beresford, son of Mr. and Mrs. H. G. Stock, of Nailsworth.

WEDDINGS

Scott—Pope: The marriage of Judith Ann, twin daughter of Mr. and Mrs. E. W. S. Scott, of Keswick, to David Floyd, son of Mr. and Mrs. C. W. Pope, of Kurralta Park, was solemnised at Hare street Methodist Church, Kurralta Park, on October 4.

Quinn—Johnson: The marriage of Mary, younger daughter of Mr. and Mrs. A. E. J. Quinn, of Strathalbyn, to Owen, youngest son of Mr. and Mrs. E. C. Johnson, of Rosewater, was solemnised at Christ Church, Strathalbyn, on September 27.

Caird—Goscombe: The marriage of Audrey, daughter of Mr. and Mrs. G. Caird, of Magill, to David, son of Mrs. and the late Mr. H. Goscombe, of Reade Park, was solemnised at St. Columba's Church, Hawthorn, on October 11.

Halliday—Spick: The marriage of Lorraine Joan, only daughter of Mr. and Mrs. A. I. H. Halliday, of Torrensville, to John Vaughan, the oldest son of the late Mr. and Mrs. W. Spick, of Torrensville, was solemnised at the Torrensville Church of Christ, on September 27.

Lienert—Otto: The marriage of Laurel Claire, second daughter of Mr. and Mrs. W. H. Lienert, of Cleve, to John Leyland, son of Mr. and Mrs. P. J. Otto, of Stepney, was solemnised at St. Paul's Lutheran Church, Crossville, on October 18.

BIRTHS

Pak—Poy (nee Wheeler): To Maureen, wife of Wilf—a son (David John), at Calvary, October 3.

Manhire (nee Richards): On September 20, at Hutchin Hospital, to Barb and Don—a son (Mark William).

CHARGE OF CARRYING ETHER

Kenneth Percy Goodlet, 28, salesman, of South Terrace, Adelaide, was charged at Adelaide during September with having, without lawful excuse, carried a deleterious drug—ether. The defendant was remanded on bail until October 1. The prosecutor's comment was: "The defendant is apparently an ether addict."

BURDEN LTD. TO PROVIDE CONTINUOUS SERVICE

Guild members at a meeting held on October 15 decided to buy Burden Ltd. in King William Street, Adelaide, and to operate it as a 24-hour pharmacy seven days a week.

A special meeting of the South Australian Branch of the Guild, attended by about 60 members, adopted an investigating committee's recommendation to this effect.

The investigating committee was then elected to carry out the project and form a co-operative society.

Steps which led to this decision are outlined in reports of the South Australian Branch of the Guild, published later in this issue.

SOUTH AUSTRALIA—*Continued*

CHEMISTS' BOARD NOMINEES

In order that an additional nomination might be received from employees, Mr. Deputy President Williams adjourned until October 14, the selection of representatives on the Retail Pharmaceutical Chemists' Board.

Three representatives are required from each side—employers and employees.

For the employees, only two 19-year-old students were offering themselves as representatives. They are John Kenneth Gibson Oswald, of Staunton avenue, Fullarton, and John Lewis Thredgold, of Sherbourne road, Medindie Gardens.

His Honour said their nominations would be accepted for the time being.

FLUORINE IN WATER SUPPLIES

The following question and answer published in the Parliamentary Debates, August 5, 1958 (Legislative Assembly), is reprinted for general information:

Mr. Laucke.—Recently I asked the Minister of Works questions in reference to adding fluorine to drinking water in the interests of dental health. The Minister said that the water supply at Port Lincoln from the Uley-Wanilla scheme contained the supposedly necessary degree of fluorine, and I asked whether research would be undertaken at Port Lincoln to determine the value of the fluorine in the drinking water. Has he a reply?

The Hon. G. G. Pearson.—The Minister of Health has supplied the following information through the Director-General of Public Health:

In 1952 to 1954 dental officers of this department made a preliminary investigation into the incidence of dental caries in children in the Port Lincoln area. No satisfactory conclusion could be drawn at that time of the relationship between dental caries and fluorine ingestion. Experience from long term investigations made overseas indicates that the continued use of drinking water containing about one part fluorine per million assists the development of caries resistance in teeth. Obviously it is necessary to have a period of many years drinking of the water, and especially in childhood.

The health of teeth is, howexer, affected by other factors such as the consumption of sugary foods, and my own opinion is that the general dietary is a more potent factor than the fluorine content of the drinking water.

It is clear that many factors should be taken into account in considering the best methods to be adopted to improve the dental state of the population. I do not recommend a research study of the circumstances at Port Lincoln.

PHARMACY BOARD

Monthly Meeting

The Pharmaceutical Board of South Australia met at 27 Grenfell Street, Adelaide, on September 17, at 7.45 p.m.

Present.—Mr. K. S. Porter (President), in the Chair, Messrs. G. L. Burns, L. A. Craig, D. C. Hill, E. F. Lipsham, R. C. McCarthy, B. F. Mildren and the Registrar.

Correspondence.—From A.N.Z.A.A.S. Local Secretary, Section "O," suggesting alteration of dates of P.A.A. Conference from May/June to August, due to Perth Conference of A.N.Z.A.A.S. The Registrar reported that a similar letter had been received by the Council of the Pharmaceutical Society, which had replied that it was not possible to change the date. This had been confirmed by the P.A.A. Executive. The report was received.

Messrs. Johnstone and Olsson were informed in reply to their enquiry that there was no record of Oliver Eusters Wilson ever having been registered as a pharmaceutical chemist in this State.

From Mr. G. W. Spencer, expressing thanks for message of sympathy in recent bereavement.

Copies of regulations relating to Therapeutic Substances, Dangerous Drugs and Poisons were received from the Pharmaceutical Society of Great Britain. Mr. R. C. McCarthy agreed to examine the regulations and report to the next meeting on items of interest.

Amendments to the Poisons S.D. and D.D. Schedules and Pharmacy Regulations received from the Pharmacy Board of Victoria. Mr. McCarthy agreed to examine the amendments and report on items of interest to the next meeting.

Mr. Hill submitted a report on items of interest in the 81st annual report of the Pharmacy Board of Victoria and brochure setting out functions and policy of that body. As a result, the Registrar was directed to place the matter of the triennial report of the Board for period ending December 31, 1959, on the agenda for an early meeting in 1959, for consideration of supplementary data to the report and financial statement to be included in the publication. Mr. Hill's report was received with interest.

Special meeting on application by Isaac Michael Matson for annulment of cancellation of his registration: The Registrar submitted draft minutes of the special meeting held on September 15, which were read and amended where required and finally approved, with amendments, for engrossing and confirmation by the President.—The Registrar produced a copy of the notice forwarded to Mr. Matson, conveying the decision of the Board, which document had been approved by the Board's solicitor for despatch by registered acknowledgment of receipt mail.

Letter to Pharmaceutical Council of W.A. forwarding copy of notice sent to Mr. Matson, conveying decision of the Board.

Apprentices, re Galenicals.—Set II: The Senior Lecturer reported that Set II had been collected and received into the Pharmacy Department.

Sets III and IV: Correspondence consequent upon the examination of these sets was approved for forwarding by the Registrar.

Set I: The report of the examiner of Set I was received and items of importance were noted. The Registrar was directed to communicate with apprentices mentioned therein as being deficient in the work submitted.

Other matters dealing with apprentices were dealt with and the necessary action duly authorised.

Inspectors' Reports.—The Registrar was directed to take action where necessary to implement the matters set out.

Finance.—Accounts totalling £50/1/10 were passed for payment.

Depots.—Application from Mr. L. H. Manning, of Tailem Bend, for depot at Narrung.

Apprenticeship Indentures.—Assignment of two sets of indentures, one completion and one cancellation, were approved.

Applications for registration were received from J. M. Culhane (N.S.W.), P. L. Hickey (Q'ld) and P. A. Hislop (N.S.W.).

Mr. W. F. Wilson inquired re registration in New South Wales.

Letters to Pharmaceutical Society of Great Britain, forwarding Certificates of Identity on behalf of Messrs. H. A. Chittleborough and D. F. Pope.

Boots

Stabillin-V

TABLETS and SUSPENSION

The heavy demand for the above product has caused us some difficulty in executing all orders.

However, as manufacturers of Phenoxymethylpenicillin under licence, we anticipate no further problems in meeting all demands for 'Stabillin-V' **in the future.**

'Stabillin-V' Tablets are available as a N.H.S. Benefit under G.P.B. Item 116, First Schedule, as follows:

STABILLIN-V Tablets (scored) strength 60 mg.
Packs of 24 and 100 tablets.

STABILLIN-V Tablets (scored) strength 125 mg.
Packs of 24, 100 and 500 tablets.

STABILLIN-V Tablets (scored) strength 250 mg.
Packs of 12, 100 and 500 tablets.

Also available :

STABILLIN-V Suspension 60 mg. per 5 c.c.
Bottle of 60 c.c.

Boots

Manufacturers of the world's largest range of Pharmaceutical and Chemical Products.

BOOTS PURE DRUG CO. (Aust.) Pty. Ltd.

SYDNEY · MELBOURNE · ADELAIDE
BRISBANE · PERTH · HOBART · NEWCASTLE

J. F. MACFARLAN & CO. LTD.

ESTABLISHED 1780

CODEINE PHOSPHATE

(Special Tabletting Form)

ALOIN

CHRYSAROBIN DITHRANOL

SCAMMONY RESIN

(Lump or Powder)

FINE PHARMACEUTICAL CHEMICALS

AUSTRALIAN AGENT:
H. BLEAKLEY & CO. (1910) PTY. LTD.,
397-399 KENT STREET,
SYDNEY, N.S.W.

8 ELSTREE WAY,
BOREHAM WOOD,
HERTS.

Chemists...

You are assured of a complete competent Service from **ROCKE'S**

Their 89 years' experience is at your service. See them at any time regarding relieving work, purchasing an established business or opening a new pharmacy.

ROCKE TOMPSITT & CO. LTD.

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X198

SOUTH AUSTRALIA—*Continued*

Relievers.—Mr. M. I. Brady to Messrs. Martin & Tonkin; Mr. R. L. Burlinson to Messrs E. F. Williams, R. H. Veitch and C. N. Pfeiffer; Mr. T. F. Christie to Mr. W. G. Clarke; Mr. J. Davies to Mr. K. S. Rodger; Mr. M. R. Eckersley to Messrs. D. C. Hill and D. R. Webb; Mr. A. M. Flower to Messrs. W. H. Willis and F. Butcher; Mr. G. R. Goldsack to Messrs. Bartold & Cox, R. Grist, M. I. Brady (Jun.) and L. H. Manning; Mr. J. R. Jelfs to Messrs. R. H. Evely and G. Murrie; Mr. S. H. Jewell to Burden Ltd.; Mr. D. M. King to Messrs E. L. Miller and R. F. Gwynne; Mr. G. C. Kinnear to Mr. M. G. Prosser; Mr. G. Mathieson to Messrs. Martin & Tonkin; Mr. V. J. Moriarty to Miss E. E. Gibson and Mr. E. W. Theel; Mr. G. H. Offe to Mr. D. C. Hill; Mr. J. S. Pain to Mr. G. Somerville; Mr. C. Parker to Mr. F. M. Crowley; Mr. W. L. Richards to Messrs. A. L. Cushway, K. C. Netting and Mrs. M. Hamilton; Mr. D. Warren to Mr. E. E. Hogben; Mr. W. Vivian to Messrs. J. & J. Bourne and R. Gartrell, Mr. G. C. John to Mr. P. M. Grist, Mr. A. M. Flower to Messrs. Thomas & Justin.

PHARMACEUTICAL SOCIETY — *Council Meeting*

The Council of the Pharmaceutical Society of South Australia met at 27 Grenfell Street, Adelaide, on September 29, at 7.45 p.m.

Present.—Mr. D. F. J. Penhall (President) in the Chair, Messrs. K. D. Johnson, E. F. Lipsham, J. R. Pickering, B. G. Wandke and Miss Z. M. Walsh and the Secretary.

Correspondence.—To Mr. R. A. Anderson, expressing pleasure of the Council at his contribution to Section "O" papers on a purely pharmaceutical subject, and his meeting chairmanship.

From the Factories and Steam Boilers' Department regarding annual report of the Department.

From Mr. G. W. Spencer and family, expressing appreciation for Council's letter in recent bereavement.

From Public Relations Secretariat, copy of letter forwarded to Secretary of Science Teachers' Association, re sale of drugs, etc., to students for home experiments.

From Society of Hospital Pharmacists of Australia (Victorian Division) requesting list of South Australian hospital pharmacists. The Secretary was authorised to forward the names of pharmacists employed in hospitals in South Australia, together with the names and addresses of the hospitals where employed.

Finance.—Accounts totalling £899/18/6 were passed for payment.

New Member Elected.—Mr. P. A. Hislop (formerly of N.S.W.).

Consideration was given to a letter received from a member requesting that the outstanding subscriptions of a fellow member be met from the Benevolent Fund in view of present financial embarrassment due to circumstances outside his control. After investigation it was decided that in view of the financial position of the member concerned being due to unfortunate circumstances, the sum of £6/6/- be paid from the Benevolent Fund in satisfaction of his subscriptions due to the Society for the two years ended June 30, 1959.

P.A.A. Conference.—Letter from University of Adelaide, advising approval of the use of Prince of Wales Theatre daily from May 25 to June 22, 1959, inclusive. Acknowledged with thanks.

Letter to Secretary, Section "O," advising not possible to change date of 1959 Conference. The President advised that he understood the Secretary of P.A.A. had also written to the Local Secretary, Section "O," on this matter.

To Mr. Walter C. Cotterell, forwarding information received from Mr. F. C. Kent, relative to booking accommodation at the South Australian Hotel for the period of the Conference.

From the F.P.S.G.A. State Branch, asking that Thursday, May 28, 1959, be allotted as a Guild night for a symposium to be arranged. The Secretary was directed to advise that the matter would be referred to the Adelaide Conference Committee, which would be meeting late in October or early in November, on a date to be fixed.

Memorandum from P.A.A., circularising tentative programme and position regarding President-elect.

Post-Graduate Sessions: The Vice-President reported on the visit to the Kilkenny Works of Australian Glass Manufacturing Co. Pty. Ltd. on September 10. Although the weather was bad, there had been a satisfactory attendance, and the inspection was generally considered successful. The Secretary was directed to thank the Company by letter for providing such an instructive evening.

Mr. Wandke reported that arrangements had been made for the next meeting to be held on October 16, in the Staff Club Room at the University. Addresses would be delivered by the four representatives who had attended the Civil Defence School at Macedon in June last. An effort was being made to obtain a suitable film from the Department of Air, to be shown at the meeting.

THE GUILD — *Annual Meeting*

The Thirtieth Annual Meeting of the South Australian Branch of the Guild was held at the Bohemia Tea Rooms, North terrace, Adelaide, on August 13, at 8 p.m.

Present.—The State President, Mr. E. L. Miller, Messrs. A. A. Russell, R. R. Patrick, Walter C. Cotterell, V. L. Mitchell, A. G. Lean, G. P. Bartold, J. C. Measday, A. C. Holloway, and 72 members.

The notice convening the meeting was taken as read, and minutes of last year's Annual General Meeting were confirmed.

The President's Report on the activities of the Branch for the year, which had already been circulated to members, was approved and adopted.

Treasurer's Report.—The Treasurer presented a report on the Revenue Account and Balance Sheet for the year ended June 30, 1958, and it was resolved that those accounts be approved and adopted.

Returning Officer's Report.—The Returning Officer (Mr. J. C. Measday) reported that the ballot for members of the State Branch Committee had resulted as under:—

E. L. Miller	231	votes
A. G. Lean	204	,,
V. L. Mitchell	202	,,
J. Physick	192	,,
J. W. Stain	179	,,
G. P. Bartold	176	,,

The first five named members would be appointed for a term of two years and the last named, Mr. G. P. Bartold, for the term of one year.

Unsuccessful members were:

A. C. Holloway	131	votes
W. W. Eriksen	117	,,
J. G. Somerville	80	,,

Election of Auditor.—Mr. H. C. Martin, Chartered Accountant (Aust.), retired during the year, and Mr. C. A. Edwards, A.U.A.(Com.), was appointed to fill the casual vacancy. It was resolved Mr. Edwards be appointed the Auditor for the ensuing year.

Establishment of an All Night Pharmacy.—The President introduced the subject of the establishment of an all night pharmacy, which had been proposed as a

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SOUTH AUSTRALIA—*Continued*

result of the introduction of week-end closing on Saturday evenings. He stated that such a pharmacy was a necessity and that the scheme for its establishment should ensure that all members shared in the profits or losses. The Committee had investigated all aspects and anticipated that an amount of up to £20,000 would be required. It was not possible at this stage to give details of what was proposed to be done, and he asked that the meeting give support to the proposals by authorising the Committee to continue its investigations.

Various members then presented their views to the meeting. The majority were in favour of the establishment of an all night pharmacy.

Mr. Finlayson moved, and Mr. Fountain seconded, that a Committee be appointed to investigate the establishment of an all night pharmacy. Carried with one dissentient.

Mr. Finlayson moved, and Mr. Fountain seconded, that the following be appointed the Investigating Committee with power to co-opt four other members of the Guild:—President, Mr. E. L. Miller; Treasurer, Mr. R. R. Patrick; Federal Delegate, Mr. Walter C. Cotterell; Vice-President, Mr. A. A. Russell; Secretary, Mr. L. H. Duncan. Carried.

This Committee was instructed to report back to a later meeting of members.

Price Control of Dispensing Fee.—The unsatisfactory position continuing as a result of the control of dispensing fees by the Prices Commissioner was discussed.

It was resolved that a deputation approach the Premier as Prices Minister and seek decontrol of chemists' professional fees for the following reasons:—

1. South Australia is the only State in the Commonwealth in which pharmaceutical professional dispensing fees are controlled by legislation.
2. In South Australia the pharmaceutical profession is the only profession whose charges are controlled under the Prices Act.
3. The scale of fees fixed by the Prices Commissioner has not been varied in keeping with increases in basic wage and other costs despite the fact that the fees in this State are the lowest in the Commonwealth.

Carried unanimously.

General discussion then took place and the matters raised were satisfactorily dealt with.

No further resolutions were submitted that received the approval of the members present.

The President thanked members for their attendance and invited all present to join him at supper.

ALL NIGHT PHARMACY—SUB-COMMITTEE MEETING

A meeting of the Special Sub-Committee appointed to investigate the establishment of an all night pharmacy was held on September 1, when there were present Messrs. E. L. Miller (Chairman), A. A. Russell, R. R. Patrick, Walter C. Cotterell, C. Saunders, R. Clampett, J. White, A. Cole, and the Secretary (L. H. Duncan).

The Chairman informed the Committee of what had taken place since the Annual General Meeting, namely that Mr. D. Finlayson, of Burden Ltd., had approached the Guild with the undermentioned proposition:—

1. That his shop at King William street, Adelaide, conducted in the name of Burden Ltd., would be made available to the Guild for use as an after hours pharmacy, free of rent and any other operat-

ing expenses except salaries and wages and incidental pay roll tax, if any.
2. That whatever the turnover, 30 per cent. of it would be calculated and this amount would be available to the Guild to meet the operating wages and pay roll tax and a small proportion for electric light.
3. That such a scheme would be carried on until June 30, 1959, when it would be reviewed, and if it was still satisfactory to Mr. Finlayson he would authorise it to be continued.

The President stated that this was a generous offer of Mr. Finlayson, but pointed out the various difficulties that would be associated with it, such as ascertaining who would be responsible for stock losses, if they should arise, management of the dispensary and possible clash of the personalities between the day and night staffs. As a result a counter proposition had been placed before Mr. Finlayson that the Guild purchase the King William street shop from him by acquiring the shares in Burden Limited. Mr. Finlayson had indicated that he would be prepared to sell the shares in the company for £10,000 including stock, to be not less than £5000, and the existing plant, fixtures, fittings, etc.

It was decided that a special Sub-Committee should be formed to further investigate this proposition and pay particular attention to minimum stock. lease renewal with the C.M.L., the length of time that Mr. Finlayson would be prepared to leave a loan of £5000, and to approach the Solicitors re the legality of the scheme and its compliance with the Pharmacy Act.

It was then resolved that a Sub-Committee of three be formed to further investigate the Burden proposition and that Messrs. Miller, Cole and Duncan be appointed the Sub-Committee for that purpose.

The Special Sub-Committee appointed to investigate the establishment of an all night pharmacy met again on September 15, at 7.30 p.m., when there were present Messrs. E. L. Miller (Chairman), A. A. Russell, R. R. Patrick, Walter C. Cotterell, C. Saunders, R. Clampett, J. White, A. Cole, and the Secretary (L. H. Duncan).

Burden Limited.—The Chairman reported the results of discussions with Mr. Finlayson of Burden Ltd. and the Secretary of that company, Mr. M. B. Harris. As a result of that meeting an option agreement pro forma had been drawn up whereby the Guild had until December 31, 1958, in which to acquire the shares of Burden Ltd.

Amongst the matters discussed at the meeting were:

(a) The suggestion that a man sleep on the premises, preferably on the mezzanine floor, and
(b) The formation of a co-operative society to acquire the shares of Burden Ltd. and finance this from issues of shares to members of the Guild in South Australia.

In this connection it was decided that—

(a) Members would be asked to subscribe for any number of shares they desired and that in the event of over-subscription all members would be allotted shares as nearly pro rata as possible.
(b) That each member have one vote regardless of the number of shares held by him.
(c) That the number of Directors appointed be from three to seven and their remuneration be agreed upon as fixed in general meeting.
(d) That Directors would also be subject to re-election annually and at least two must be Guild State Branch Committee members.
(e) It was suggested that the undermentioned be proposed as the pro tem Board of Management: Chairman, Mr. E. Lloyd Miller; Messrs. J. White, R. Clampett, A. A. Russell and S. C. Saunders.

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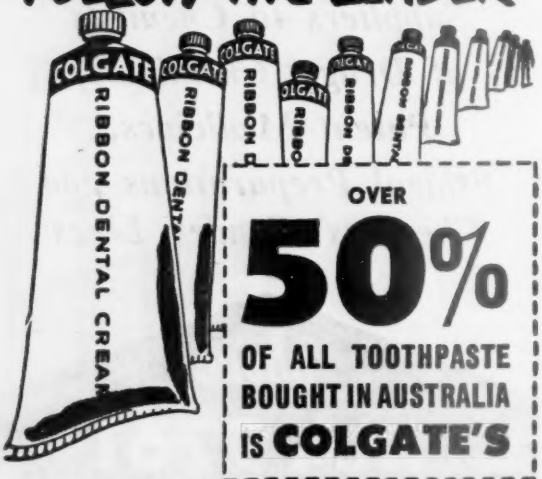

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SOUTH AUSTRALIA—*Continued*

It was resolved that the necessary steps be taken to prepare a plan to submit to a general meeting of members with the purpose of authorising the purchase of Burden Ltd., and that the Secretary in the meantime should obtain information on a number of legal questions and other details.

STATE BRANCH COMMITTEE MEETING

The State Branch Committee of the South Australian Branch of the Guild met at Churchill Building, Gawler Place, Adelaide, on October 6, at 7.30 p.m.

Present.—Messrs. E. L. Miller (President), A. A. Russell, R. R. Patrick, A. G. Lean, Walter C. Cotterell, G. P. Bartold, J. Physick, J. W. Stain and L. H. Duncan, Secretary.

New Committee Member.—The President welcomed the new Committee member, Mr. J. W. Stain, to the meeting.

All Night Pharmacy.—The President reported that the investigation into the possibility of an all night pharmacy was proceeding very satisfactorily. A notice of meeting to be held on October 15 at the Chamber of Manufactures Board Room had already been despatched to members, and a report would be presented at that meeting, which was hoped would approve the suggestions submitted, and that the necessary financial backing would be arranged.

Prices Department.—The Secretary reported that a letter had been written to the Prices Commissioner and also to the Premier. No replies to these letters had been received.

Relaxa Tabs.—Secretary reported having forwarded all known facts to the Federal Merchandising Service. A letter had been received from them advising that the matter had been discussed with Mr. Cotterell and that a meeting was being arranged with the principals of H. W. Woods Pty. Ltd. when Mr. Cotterell was next in Melbourne for the Federal Council Meeting.

Merchandise Advertising Publicity Scheme.—It was decided that the Secretary write to Mr. Ross for full details of the plan as it exists in Melbourne and the other States, if known to him.

Southern Drug Co. Ltd. Request for Increased Price of Methylated Spirits and Liquid Paraffin.—The Pricing Officer reported to the meeting. It was resolved that the liquid paraffin price was satisfactory and that the Pricing Officer be authorised to advise the Southern Drug Co. Ltd. to increase their prices as requested.

In connection with methylated spirits it was resolved to accept the price for 26 oz. and ask whether a continuity of the supply of the 11 oz. preferably or the 13 oz. could be supplied.

Extra Medicine Schedule.—It was decided that the Delegates to the Federal Council Meeting should put the views of the South Australian Branch concerning the necessity for an Extra Medicine Schedule.

P.A.A. Conference, May/June, 1959.—The next meeting of the Central Committee would be held either late in October or early in November.

D.H.A. and Bickfords Parcel Buys.—Mr. Patrick reported the result of his approach to the Managements of Bickfords and D.H.A.

Tax Cards.—It was decided that the Secretary should write to the West Australian Branch and ask for a copy of their tax card and ascertain the cost thereof.

It was also decided that the Secretary should obtain a quote for the supply of rubber stamps to be used by members, such stamp to contain name, district and the statement of description as a chemist.

Price Cutting.—The President reported upon his interview with Messrs. Roach and Currie.

It was reported that a further case of price cutting had occurred, and that it would be taken up by P.A.T.A.

It was decided to write to Nestles and advise them that Lactogen is still being made available for 1/- less than chemists can obtain the same.

Australian Glass Manufacturers Ltd.—The company wrote stating it would be pleased to print the cartons as suggested by the Guild after existing stocks have been disposed of.

Mr. W. B. Howard—Address to Members.—The President reported upon the address to members by Mr. Howard.

Christmas Calendars.—It was decided that this matter be referred to the Federal Secretary to be placed on the Federal Council Agenda. A suggestion was made that each month of the calendar be supported by the relative manufacturers interested in that month's selling campaign and that this suggestion be forwarded to the Federal Merchandising Service.

National Health Act—Flat Professional Fee.—Letter dated September 16, 1958, containing extract of letter from the Director-General of Health, Canberra, was read to the meeting and received.

The President reported upon the meeting with Mr. Cunningham at the C.M.L. Building. The meeting instructed the Federal Delegates to press Federal Council to approach the Federal Government for reversion to the previous scale of fees and accept the 21 per cent. increase in relation thereto. In this connection the Secretary was instructed to send a copy of the letter received from the Department of Health to the Federal Secretary.

Federal Council, Annual Meeting Agenda. — The Agenda for the Federal Council Meeting to be held from October 27 to 30 was discussed in detail.

Children and Home Experiments.—It was decided that on receipt of this article, to be published in the next issue of the "Gilseal News," a copy be passed to the "Advertiser," with a request that it be inserted in its next issue, if convenient.

"Gilseal" Cotton Wool.—The introduction of this line on a national basis will be discussed at the Federal Council and will be reported upon by the Delegates at the next meeting.

Ford Pill Folders.—Advice from the manufacturer stating that the folder will be altered as requested by the Federal Merchandising Service was received.

Sanders Chemical Ltd.—Secretary reported that the Sales Manager, Mr. R. F. Taylor, had visited the office on October 1. He gave information of a new stand advertising Gilseal Dyes that would be introduced very shortly.

Accreditation of Wholesalers.—A letter from Federal Office asked for all the details which the State Branch Committee considered necessary to arrive at a suitable form of accreditation. The Secretary was instructed to advise that the Federal Council Delegates will inform the meeting of the suggestions of this State.

Stock Control System.—The Federal Merchandising Service advised that a Stock Control System prepared

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by Mr. N. E. Edmiston, of Nambour, Queensland, would be duplicated and submitted to all members of the Federal Council for their consideration.

Publicity for the A.P.F.—The Western Australian Branch forwarded six copies of a plan for publicising the A.P.F. and suggested that the State Branch Committee draw up outlines of a suitable publicity campaign or else alter or add to the one sent by that Branch.

Secretary was instructed to send a copy to Mr. Russell and Mr. Cotterell and circulate another copy among the members of the Committee; also to write to Western Australian Branch and thank them for their letter and co-operation.

Trade and Commerce Committee Report.—Mr. Patrick advised that arrangements had been made for a film evening to be given by the National Cash Register Co. Members had already been circulated concerning this activity.

Federal Delegate's Report.—Mr. Cotterell referred to the Wages Board new appointees, drugs over the counter price list, Repatriation Prescriptions.

The Secretary was instructed to write to Mr. Burke at Woomera and inquire whether the situation with the Canteen was now satisfactory.

Direct Supply of Prescriptions from Warehouses.—It was decided that a letter should be forwarded to all warehouses with a copy to the Central Board of Health drawing attention to complaints received from members that Third Schedule Poisons and other prescriptions are being supplied direct to the general public, and asking that suitable steps be taken to ensure that this practice is not continued.

The meeting was then declared closed.

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Commonwealth News

PERSONAL *and* GENERAL

INVESTITURE OF FEDERAL GUILD PRESIDENT

MR. ERIC SCOTT. O.B.E., Federal President of the Guild, after the investiture by His Excellency the Governor of Victoria (Sir Dallas Brooks) on September 23. Mr. Scott's public service was recognised in the Birthday Honours last June. He was photographed with his son, Barry, on the lawn at Government House, Melbourne, following the ceremony.

C.S.I.R.O. MAN APPOINTED TO INTERNATIONAL COMMITTEE ON TICK-BORNE DISEASES OF LIVESTOCK

Mr. R. F. Riek, of the C.S.I.R.O. Division of Animal Health and Production, has been made a member of the Expert Panel on Tick-Borne Disease of Livestock formed by the Food and Agriculture Organisation of the United Nations and the International Office of Epizootics.

The inaugural meeting of the Panel will be held in London from November 24 to 29, 1958. Discussions on the various tick-borne diseases will include control of the tick-vectors, research methods and techniques for studying the organisms which cause tick fever in cattle, and recent developments in regard to the control of these diseases in the various countries represented.

Mr. Riek graduated in Veterinary Science at the University of Queensland in 1944 and obtained his M.Sc. at the University of Liverpool in 1954. His previous work with C.S.I.R.O. has included successful investigations into Queensland itch in horses and on the treatment of internal parasites of cattle. More recently he has been studying cattle ticks and the tick-fever blood parasites which they carry.

Mr. Riek will travel to the London Conference via South Africa, where he will discuss problems of mutual interest with workers engaged there in research on cattle tick fevers and tick control measures.

WESTERN AUSTRALIA

PERSONAL *and* GENERAL — *State News*

Members desiring publication of personal items of interest are invited to write or telephone details to the Journal Correspondent in W.A., Mr. F. W. Avenell ('phone BA 4082).

Mr. W. E. Weeden has been appointed manager of the Friendly Societies' Dispensary at Fremantle in succession to Mr. J. C. Watson, who recently resigned.

Mr. J. D. Forgan returned from England on October 13 per the "Iberia" after 18 months' working holiday in England.

Mr. Neville Crump, of Southee's Terrace Pharmacy, left per s.s. "Orontes" on October 10, for a working holiday in England. He expects to be away about 18 months.

Wedding.—Congratulations and best wishes to **Mr. and Mrs. John Hammersley,** who were married at St. Peter's Church of England, East Fremantle, on October 4. John has since opened a pharmacy at Three Springs.

Mr. J. S. Miller, of Merredin, called at the Pharmaceutical Council office during his visit to Perth to celebrate his father's 90th birthday. Miss M. Whittle acted as locum.

Mr. J. V. Chadwick, who last month commenced business at Midvale, was taken ill on October 6. At the time of writing these notes he was still in hospital. Messrs. B. B. Caldwell and J. D. Forgan have been acting as relievers.

Miss Janet Firth left per the s.s. "Oronsay" on October 31 for the eastern States, whence she will journey to Ontario, Canada. Arrangements have been made for her marriage to Mr. M. Meharry at Ontario on December 13.

Mrs. R. Caddy is now home from hospital, where she spent a month following a car accident on September 21. Fortunately her husband, who was driving when the car skidded on a wet, slippery surface, escaped serious injury.

Mr. S. T. Lippingwell is back at the pharmacy following an operation last month. Miss J. Broome acted as locum.

Chemists on holiday this month included Mr. V. Parker, Manning (Miss M. Pumfrey relieving); Mr. N. A. Steere, Perth (Mr. B. B. Caldwell relieving); Mr. A. R. Norman, Albany (Miss M. Whittle relieving); Mr. W. J. Slaven, Wembley (Mr. J. Benn relieving); Mr. M. J. Comparti, Kojonup (Miss P. W. McKay relieving); Mr. V. Turner, Victoria Park (Miss J. Scott relieving); Mr. R. H. Scott, Nannup (Mr. W. L. Nelson relieving); Mr. J. W. Butler, Guildford (Mrs. S. Appleyard relieving); Mr. M. Thomas, Bunbury (Mr. T. O. Price relieving); and Miss V. Garcia, Bedford Park (Mrs. R. Edwards relieving).

ADDITIONS TO LIBRARY

The following latest edition Chemist and Druggist series books have recently been added to the Pharmaceutical Society's library:—

Chemist's Dictionary of Medical Terms.
C. and D. Refresher Course.
Essentials of Treatment.
Art of Dispensing.
Pharmaceutical Formulas, 2 volumes.
Chemist's Veterinary Handbook.
Diseases and Remedies.
Chemist's Dictionary of Synonyms.
Pharmaceutical Emulsions and Emulsifying Agents.
Poisons Guide, 2 volumes.
Modern Course of Photographic Studies.

FINAL YEAR STUDENT'S BROADCAST TALK

The following is the text of a talk by Mr. Kevin Hynes, a final year student, as broadcast from Station 6WN, Perth, on September 29, in the Australian Broadcasting Commission's series, "This is My Work":—

When I came to prepare this talk I asked myself, as a logical starting point—"Well, what is my work?" And do you know, I found it an extraordinarily difficult question to answer. I wonder how many men or women could say with complete certainty and definition, "This is my work, that is my work, it starts here, it finishes there." Most callings overlap to some extent with at least some others, the reason being that human nature is one essential ingredient of the work formula and human nature cannot be divided into neat watertight compartments.

Certainly no such hard and fast boundary exists in pharmacy. Gone forever are the days when the pharmacist was a simple uncomplicated seller of pills and potions, also relatively simple and uncomplicated. The new age is with us. The age of vast research organisations, of mighty laboratories, intensely trained and specialised personnel and, at the end of the line, the final buffer between the latter-day alchemist of the laboratory and the patient, stands the modern pharmacist. Yes, the old order changeth and few, I think, mourn its passing.

The practice of pharmacy in one form or another is almost as old as recorded history. The Greeks referred to it as "the handmaiden of medicine," but for a long time I'm afraid it was in danger of becoming the scullery maid, the Cinderella, the unwanted one. For this, I feel, Victorian snobbery is at least partly to blame. For some obscure reason, to be "in trade" was in Victorian eyes almost as much of a social stigma as being a public felon, and we all know how they fared in those days. Because of the nature of his calling, it was and still is necessary for the pharmacist to maintain a shop. Ipso facto he became a tradesmen in the curiously astigmatic eyes of those times and any pretensions towards professional status was regarded as impertinence.

How difficult it has been to overcome that barrier! Indeed in certain ways the pharmacist himself has been his own worst enemy in this respect; but with modern teaching methods and the tremendously increased technical knowledge required, pharmacy is once again taking its place as the "handmaiden of medicine."

All this may sound something of a contradiction of my earlier claim that no hard and fast boundary can be drawn around the place of today's pharmacist in society, but it is not. In the strictly technical sense, perhaps yes, but, as in all our dealings with our fellow man, human nature intrudes itself. I think it must be the sight of the white jacket that unlocks so many and varied floodgates. Whatever the key, the pharmacist must be prepared to play a variety of roles. Dispenser, philosopher, psychologist, guidance officer, confessor; most things come his way sooner or later. Shakespeare remarked

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VICTORIA: John Kiddell, 245 Swan Street, Richmond. JB 2543.
SOUTH AUSTRALIA: Doug Toppin, 1 Balkissoch Road, Torrens Park. U 3620.
WESTERN AUSTRALIA: Geoff Martin & Son, 83 Brisbane Street, Perth. BF 1791.

WESTERN AUSTRALIA—*Continued*

that "It's a wise man who knows his own father"—it's a wise pharmacist who knows his own limitations. It requires tact, patience, understanding and frequently not a little firmness to direct some enquiries to the right source, usually the doctor.

It's quite astonishing and at times rather terrifying, the problems which are put to the average pharmacist in the course of his work, and it's equally astonishing that he has such difficulty in convincing so many people that their faith in his views on some subjects, however flattering, is quite unjustified. His job is to know and understand the use and application of drugs and to interpret and carry out the instructions of the doctor as expressed in a prescription.

Just by way of diversion for a moment—that word "drug." Every pharmacist is asked probably at least once a day and with a greater or lesser degree of anxiety, "But that doesn't contain any drugs, does it?" That's something like asking of a tree, "That doesn't contain any wood, does it?" Every substance used in medicine and pharmacy goes by the generic name of "drug." The average enquirer refers, of course, to a particular class of drug, a narcotic. Such is the usage of words.

But to return to the point. As I said, it is the pharmacist's job to know and understand his drugs. Thanks to the much broader scope of present-day education, and thanks also to the increasing number of more or less widely-read magazines, which include at least pseudo medical articles, the layman has a much wider knowledge of the drugs used in the treatment of various diseases than hitherto, even if that knowledge is far from expert. The last twenty years or so have seen more progress made in pharmacology and pharmacognosy than the rest of our recorded time, and with this advance has naturally come a corresponding increase in the degree of knowledge required of the pharmacist. Most pharmacy courses at present are conducted over a period of from three to five years, usually four, either at a University or at some approved or affiliated school, a College of Pharmacy (as in Victoria), or a Technical College (as here in our own State).

The modern pharmacist's horizon has opened very much more widely than that of his forebears, but not to the extent of involved diagnosis. He is neither trained nor qualified for that. Naturally, over the years, most pharmacists acquire at least a working knowledge of the commoner ailments of man, but still it is the wise man who leaves the field of differential diagnosis to the man who is trained and qualified for it, the doctor. To do otherwise is to be like the householder who decides to repair his own electrical circuits. All may go well for a time, but sooner or later disaster comes. Since the pharmacist is trained in the knowledge and use of drugs it is on his shoulders that the final responsibility rests where the accuracy of prescription and dosage is concerned. To invite further complications by usurping the doctor's prerogative is simply, to use the colloquialism, "sticking one's neck out."

There are, of course, those who are prepared to do so just as there are less than perfect members of all callings, but I feel I can say confidently that there exists in pharmacy no higher percentage of foolish or venal men than one would find in any other walk of life.

I made reference a little earlier to pharmacology and pharmacognosy. Two rather big words. Two very big subjects. This is the age of the specialist. The Jack of all trades is practically a museum piece anywhere these days, and this is just as applicable to pharmacy as to anything else. Neither of these sciences could strictly be called new, but such has been the advance in medicine and treatment of disease even in this century, that

the scope of these two closely inter-related fields has broadened to a tremendous extent. It is entirely possible that the future will bring with it the specialist pharmacist, the man trained in one or the other of these branches of his profession, not necessarily to the exclusion of the remainder, but rather as the doctor is trained, educated in all aspects of the work with particular emphasis being placed on one particular section.

Pharmacology is the study of the effects of drugs on the physical organism, on man; that science which enables the specialist to say in what way and on what part of the body a particular drug or combination of drugs will exert its effect, and similarly, to predict the likely effects of chemically related drugs.

Pharmacognosy, which is perhaps the older of the two, is the science of crude drugs, their physical, chemical and botanical properties. The two are obviously closely interwoven and between them present an almost limitless horizon for further study.

It is an interesting sidelight of the modern advances in these two components of pharmacy to find the extent to which quite a considerable proportion of the ancient nostrums and potions of our ancestors are being rediscovered, or perhaps I should say re-employed. Very few, of course, are still used in their crude forms; but from a great number the chemists and pharmacists of today have been able to extract many of our most useful of today's weapons against disease.

You will possibly have noticed that during this talk I have referred consistently to "the pharmacist" and not to the "chemist." They are two distinct and separate entities operating in related, but by no means the same field, and with the heavy emphasis being laid on all branches of technical education and advance these days, the older and more accurate title of "pharmacist" is being more frequently employed to designate the man who is trained in the particular field of pharmaceutical chemistry.

What will the future bring? I have already speculated briefly on one of the possibilities. It is, of course, always rash at least to attempt to predict future development, perhaps at the present time more than ever before, but whatever is in store for us I feel quite confident that the pharmacist of the future will continue to occupy his ancient place in the pattern of human relationships, and as knowledge makes further and further strides, as of course it will, that he will not be behindhand in adding to his knowledge and skill for the benefit of mankind.

THE GUILD

S.B.C. Meeting

The State Branch Committee of the Western Australian Branch of the Guild met at "Guild House," 61 Adelaide terrace, Perth, on October 14, at 7.30 p.m.

Present.—Messrs. G. D. Allan (Chair), W. G. Lewis, S. J. Wilson, R. W. Dalby, R. D. Edinger, R. I. Cohen, H. J. Stone, A. W. Rock, J. V. Hands, M. H. Arnold.

P.A.T.A. Representative.—The P.A.T.A. had been notified that Mr. B. A. Illsley had been nominated and had accepted the position as Guild representative on the Council of the P.A.T.A.

Correspondence.—Letter from Mr. B. L. Smyth to be referred to the Federal Merchandising officers at the Federal Conference.

Children and Home Experiments.—Guild to initiate action for home experiments through Mr. Carr of the W.A. Health Council.

Beauty means business

when you receive

68% PROFIT

ON *Lournay*

Beauty Preparations

✻ With cosmetic sales increasing yearly, and the bulk of them being made through Pharmacies, you'll find it pays to stock . . . LOURNAY . . . virtually the Chemist's own cosmetic range.

GUILD CHEMIST

Backed by strong-selling national advertisements, all carrying the Chemists' Guild Insignia, and attractive display material.

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LIMITED

Makers of Fine Rubber Goods since 1870

'Simplic' Enemas,
Breast Relievers,
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Australian Representatives:
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More press advertising! More magazine advertising! More radio advertising! More advertising than ever before is now selling these two lines.
More than ever it will pay you to stock and feature both AIR-WICK MIST and the famous AIR-WICK bottle.

H61

WESTERN AUSTRALIA—*Continued*

Helena Rubinstein Agencies.—Letter to be sent asking for explanation why department stores can handle all agencies and chemists are restricted.

Zoned After Hour Service.—It was recommended that the suggestion of a zoned after hour Pharmaceutical Service be discussed with the Department.

Doctors Quoting Retail Prices.—It was decided that firms employing detail men should see that only one price is quoted to the medical men—the **dispensed price** to the public.

New Member Elected.—Mr. J. V. Chadwick, 22 Hooley avenue, Midvale. (Reinstatement.)

Registration of Mr. R. W. Fort's branch pharmacy to be recorded on receipt of the completed form.

Pricing Officer's Report.—It was reported that price alterations are now notified to chemists on roneoed sheets alternating fortnightly with printed sheets. D.H.A. has reduced the wholesale price of its lactose, but the retail price remains the same. A list of manufacturers supplying P.M.S. tablets at the basic price is being prepared for distribution to chemists.

It was recommended that when new quotes for Tax Cards are called, the cost for tax cards one inch longer be obtained, and that the Advertising Committee consider the advisability of redesigning the card.

It was reported that the Federal Treasurer had been approached by a Grocers' Association for the purpose of allowing grocers to enter patent medicines on tax deduction cards.

A request had been sent to the Repatriation Department for a revision of Dispensing Fees.

Following receipt of a circular from Nestles listing a minimum and maximum retail price for Lactogen, the Manager of Nestles had been contacted. He pointed out that the company was concerned about the price cutting of Lactogen and was endeavouring to give retailers a minimum profit of 17½ per cent., which is the ruling mark-up throughout the rest of Australia.

Trade and Commerce Report.—Correspondence from Federal Office on requests by two manufacturers for "Chemists Only" contracts was discussed and passed on to the State Branch Committee for decision.

A suggestion was received from a chemist on the value of a window display to further publicise Tax Deduction Cards. The idea was endorsed by the Committee, and details will be passed on later to all members via the Trade and Commerce notes.

A report was received from a chemist in reference to a firm claiming chemists' sponsorship of its product. The matter was investigated and satisfactorily cleared up direct with the chemist who had reported it.

A member sent in a query regarding the wholesale price of bulk paraffin oil. After discussion it was decided to advise the member to take up the matter with the warehouse concerned.

Federal Council Meeting Agenda.—The Agenda for the Federal Council meeting was tabled and discussed and directions given to the Delegates.

The meeting closed at midnight.

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Now Hanimex open up a big, **new** profit field for you, with the release of the new Argus 75. Now you can sell, with confidence, a camera which gives a **perfect picture every time** . . . even the rankest amateur can't go wrong! Takes color or black and white. No double exposures, no misframes, no fuzzy pictures, and has a big viewfinder. The biggest advertising campaign ever, for a single photo product, will promote sales for **you** . . . and the profit margin is right too! Order **now**, from your nearest Hanimex office.

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Smart Units for Smart Pharmacies

8 FEET LONG

£ 81 - 10 - 0

Less 2½% cash discount if this advertisement quoted

Inquire about our store planning service. We have the "know-how" based on 60 years' experience.

BOSTON SHOPFITTINGS PTY. LTD.
64 SYDNEY RD., BRUNSWICK N. 10
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3/4" PLASTIC Price Stripping Available!

Full range of matching price tickets for Chemists!

Neat and colourful, this new width three-quarter inch Price Stripping with its matching numerals will give your Pharmacy that modern appearance which helps your profit-building merchandising.

PRICE SETS

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WINDOWS & DISPLAY CASES

For show-case and window-pricing the de-luxe P.P.T. set is ideal. It can be set up in seconds and gives that distinctive quality appearance necessary for modern display.

½-in. characters 38/ set
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Australia's best value in Price Systems!

This new ¾ in. stripping is only 42/- per 100 feet, and sets of 36 dozen figures, from 1d. to 10/-, are only 72/- plus tax. Easier to fix, looks better, lasts longer! Payment on Invoice. Get the best . . . get a P.P.T. UNIVERSAL Pricing System!

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TASMANIA

PERSONAL *and* GENERAL

State News

Members desiring publication of personal items of interest are invited to write or telephone details to the Journal Correspondent in Tasmania, Miss M. L. Williams, 276 Argyle St., North Hobart ('phone B 1010).

Birth.—Congratulations to **Mr. and Mrs. Tony Orbell** on the arrival of their new daughter.

It is with regret that we have heard of the resignation of **Mr. Tony Gould** from the Pharmacy Board.

Mr. A. P. Brammall has been transferred to Queensland and is at present having a holiday.

Welcome home to **Mrs. Ross** after her latest "globe trot." This time Mrs. Ross has had a trip to Canada to attend her son's wedding.

By the time these notes go to press we hope that both **Mr. Keith Jenkins,** who has been in Calvary Hospital to undergo an operation, and **Mr. Brownell,** who has been a patient at the Royal Hobart Hospital, are well on the way to complete recovery.

PHARMACEUTICAL SOCIETY

General Meeting

A General Meeting of members of the Pharmaceutical Society of Tasmania was held at 93 Davey street, Hobart, on September 18, at 8 p.m.

Present.—Mr. L. J. McLeod (Chairman) and 35 members.

Full-time Pharmacy Course.—Mr. McLeod read correspondence between the Society and the Director of Education regarding our approach to have a two year full-time pharmacy course introduced.

Guest Speaker.—Dr. N. D. Abbott then addressed the meeting on "Law and the Daily Task."

He mentioned the basis of our laws in governing our activities and particularly referred to negligence and defamation.

His remarks were most helpful to members, who expressed their appreciation for the way in which the many points were explained to them.

At the conclusion of the address, supper was served.

COUNCIL MEETING

The Council of the Pharmaceutical Society of Tasmania met at 85 Elizabeth Street, Hobart, on October 13, at 6.15 p.m.

Present.—Mr. L. J. McLeod (Chairman), Messrs. C. A. Robertson, E. H. Shield, W. G. Webb, B. J. Shirrefs and the Secretary.

Full-time Pharmacy Course.—The Chairman reported that the Director of Education had not yet completed his investigations into our proposal.

A letter received at the Technical College from the National Association of Pharmaceutical Students was read, setting out their education policy, which, to a large extent, tied in with the steps we were now taking. A copy of their letter had been forwarded to the Director and others concerned.

Financial.—Accounts totalling £30/19/6 were passed for payment.

Transfers from Launceston.—The Secretary reported that there was a possibility of three apprentices requiring transfer from Launceston in the next year. It was decided this position should be reported to the next general meeting.

Civil Defence School No. 84.—Advice was received from the Pharmaceutical Association that a Civil Defence School would be held at Macedon (Victoria) from November 30 to December 5, and that each State would be asked to nominate a pharmacist to attend.

Mr. L. J. McLeod was nominated to attend the school.

Pharmaceutical Association of Australia.—Advice was received that the next meeting of this Association will be held in Adelaide from Monday, May 25, to Tuesday, June 22, 1959.

General Meeting.—The next general meeting will be held on November 20, when Dr. Burgin will address members on the new British Pharmacopoeia.

The meeting closed at 6.50 p.m.

THE GUILD

S.B.C. Meeting

The State Branch Committee of the Tasmanian branch of the Guild met at Campbell Town on September 28, at 11 a.m.

Present.—Mr. G. M. Fleming (Chairman), Messrs. G. S. Copeland, D. R. Crisp, G. A. Calver, A. Fennell, A. G. Crane, L. W. Palfreyman, J. B. Warland Browne, C. A. Robertson, A. G. Gould, N. G. Dineen, E. H. Shield, and the Secretary.

Members expressed their sympathy with Mr. Jenkins in his sickness and asked that a letter be forwarded wishing him a speedy recovery.

Election of Office-bearers.—

President: Mr. G. M. Fleming was re-elected.

Vice-Presidents: Three nominations were received, from Messrs. G. S. Copeland, C. A. Robertson and A. G. Crane.

Messrs. G. S. Copeland and C. A. Robertson were elected on ballot.

Treasurer: Mr. K. H. Jenkins was re-elected.

Federal Delegates: Three nominations were received, from Messrs. G. S. Copeland, D. R. Crisp and E. H. Shield.

Messrs. G. S. Copeland and E. H. Shield were elected on ballot.

The Chairman expressed appreciation for the long service which Mr. Crisp had given in the position of Federal Delegate, and Mr. Copeland supported his remarks.

Mr. Shield expressed appreciation for his election and stated he knew he could look to Mr. Crisp for assistance.

Mr. Crisp stated that although he would miss being a Delegate, he welcomed the change, which would bring fresh thought to the meetings, and he assured Mr. Shield of his full support.

Northern Delegates: As a result of the election for Northern Delegates in which Mr. Dineen and Mr. Calver had gained the same number of votes, it was necessary to determine which would be in office for one year

TASMANIA—*Continued*

and the other for two years in order to make an equal number of retirements each year in the future. On a draw it was decided that Mr. Dineen would remain for two years and Mr. Calver for one year.

Members expressed appreciation of the long service which Mr. Cartledge had given to the Guild as a member of the State Branch Committee and asked that a letter be sent to him from this meeting expressing this appreciation.

Auditors: Messrs. Bumford and Walter were re-elected.

Sub-Committees: The following sub-committees were elected:—

Trade and Commerce: Messrs. C. A. Robertson, E. H. Shield and J. B. Warland Browne.
"Gilseal News": Messrs. A. G. Gould, G. A. Calver and G. M. Fleming.
Finance: Messrs. K. H. Jenkins and A. Fennell.
State Advisory Committee for Pharmaceutical Education—Representative: Mr. L. W. Palfreyman.
Pricing Officers: Messrs. A. Fennell and G. A. Calver.
Pharmaceutical Association Liaison Representatives: Messrs. D. R. Crisp and L. W. Palfreyman.
State Executive Committee: President, Vice-Presidents and Federal Delegates.

New Member Elected.—Mr. Ian Bruce McLeod, of 380 Elizabeth street, Hobart.

Financial.—Accounts totalling £106/4/11 were passed for payment.

Publicity and Merchandising Plan.—The Chairman reported that the Sub-Committee had met, and the plan and revised allocation had been approved.

It was considered necessary that a personal approach be made to members in order to get them to tie in with the advertising.

"Dexsal" Months.—Advice was received from D.H.A. (Tasmania) Pty. Ltd. that November, 1958, and February, 1959, would be featured as "Dexsal" months and asked our support.—It was agreed that a circular should be sent to members regarding these months.

Pharmaceutical Association of Australia.—Advice was received that the next meeting of the Association would be held in Adelaide from May 25 to June 2, 1959.

The meeting then adjourned for lunch.

Federal Council Agenda.—The agenda for the next Federal Council Meeting was considered and detail and Delegates advised on each item.

Title of Guild.—Mr. Copeland stated that he suggested bringing forward for consideration by the Federal Council that the name of the Guild be altered to "Chemists' Guild of Australia."

Members considered the shortening of the name would have many advantages.

Dispensing Prices.—Mr. Fennell presented the schedules of dispensing fees as laid down by the other States and submitted a proposed schedule for Tasmania.

The meeting agreed that we should work in close relation to Victoria, and the proposals drawn up by Mr. Fennell were adopted.

Annual Dinner.—Members agreed that it was desirable to have an Annual Dinner to which wives would be invited. The actual date was left for the President to arrange early in November.

Superannuation Scheme.—Mr. Calver explained details of a Superannuation Scheme which he suggested could be introduced for Guild members. Mr. Copeland undertook to discuss the proposal with Federal officers.

The meeting closed at 4 p.m.

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For ACCURATE, PROMPT AND FRIENDLY SERVICE

"Distributors for Luitpold Werke, Munich. Manufacturers of SEMORI, CLAUDEN, HIRUDOID COMBIZYN, MONOTREAN, PASPAT."

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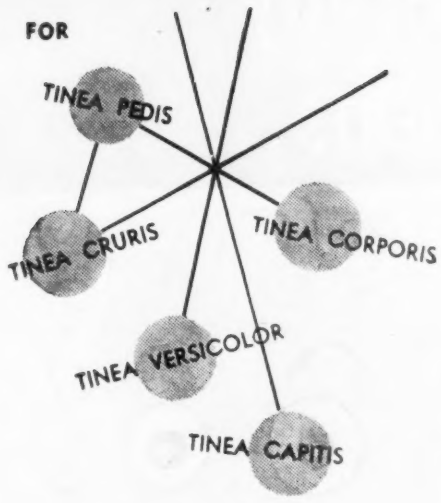

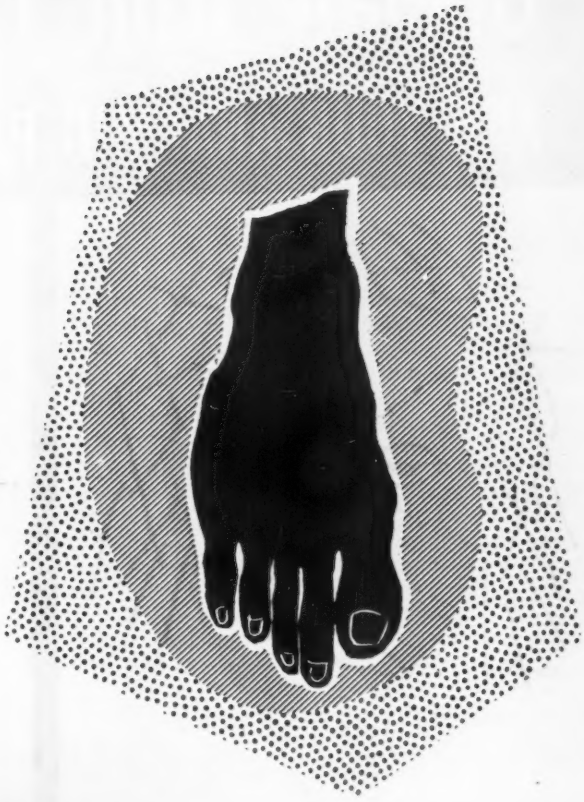

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A POTENT ANTIFUNGAL PREPARATION

PACKINGS

Tincture (5 per cent.)
Bottles of 50 c.c.

Ointment (5 per cent.)
Tubes of 25 grammes

Dusting Powder (5 per cent.)
Tins of 30 grammes

ROCHE PRODUCTS PTY. LIMITED — 1 BARRACK STREET, SYDNEY

Chelate Iron Therapy (1)

ARE YOUR ANAEMIC PATIENTS . . .

IRRITATED OR **CHELATED ?**

F.A.B. & F.A.B.Co

tablets offer a completely new approach to oral iron therapy through the concept of Chelation. Haemoglobin is a chelate complex of Iron. F.A.B. (brown) and F.A.B.Co. (red) tablets are chelates of iron and a complex of amino acids produced by protein hydrolysis and possess outstanding qualities in terms of freedom from undesirable gastro intestinal effects and, at the same time, the utilisation of iron is exceptionally high.(2)

(2) *Gillbespy R.C.*, 1957, *in a private communication reported . . . "occasional patients showed a rise in haemoglobin of more than 2% per day."*
(1) *Franklin M. et al. J.A.M. A* 166 1685 *April, 5th*, 1958.

MR

Literature and samples will be sent on request to

MEDICAL RESEARCH PTY. LTD., SIRIUS ROAD, LANE COVE, N.S.W.

NEW SOUTH WALES

PERSONAL *and* GENERAL

State News

Members desiring publication of personal items of interest are invited to write or telephone details to the Journal Correspondent in N.S.W. 'Phone BU 3092.

Experience is the substitute for the advice you did not take.
—*Francis Rodinan.*

Mr. C. J. T. Hooke has purchased Mr. J. M. Borthwick's pharmacy at 260 Brunker Road, Adamstown.

Mr. D. F. Enright is now the proprietor of Harris's Pharmacy, River Street, Ballina.

Mr. A. L. Spies has purchased Mr. J. H. Scott's pharmacy, 1 Railway Road, Meadowbank.

Mr. R. C. Solomon is opening a pharmacy at 32 Park Street, Sydney.

Mr. A. B. O'Neill has purchased Miller's Pharmacy at Inverell.

Mr. J. C. Scott has opened a pharmacy at 333 Crown Street, Surry Hills.

Mr. John B. Mealey has purchased Mr. Devaux's pharmacy, 70A Campbell Parade, Bondi Beach.

Mr. A. J. LeMesurier is now in business at 264 Darling Street, Balmain.

Mr. H. D. Joseph has purchased Mr. R. T. Flint's pharmacy, Burnt Street, Seaforth.

Mrs. M. M. Bouffler has purchased the pharmacy at 77 River Road, Revesby.

Mr. W. H. Crossley, late of Inverell, is now in business at 310 South Terrace, Bankstown, having purchased Mr. A. J. Verman's pharmacy.

Mr. E. F. Byrne has opened a pharmacy at the corner of Karne Street and Shorter Avenue, Narwee. It will be known as "Roselands Pharmacy."

N.S.W. CHEMISTS' GOLF CLUB

The Christmas meeting and dinner will be held at Manly Golf Club on Thursday, November 20.

MR. L. W. SMITH CONVALESCENT

Readers will be sorry to learn that Mr. Les Smith, N.S.W State Guild President, had to undergo a most painful gall bladder operation recently. On the other hand, they will be glad to know that he is over the worst of a successful operation and making steady progress. The operation was performed at the Masonic Hospital, Ashfield, on October 13.

Telegrams, letters and cards have been pouring in from well-wishers all over the countryside. All wish him a speedy recovery and look forward to seeing him back in tip-top form in the very near future.

AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, LUCAS HEIGHTS

Open Days on December 8, 9 and 10 have been arranged primarily, but not exclusively, to enable professional societies to visit the Lucas Heights Research Establishment to acquaint themselves with developments in atomic energy research.

For this reason tickets to visit Lucas Heights will be made available through the Pharmaceutical Society of New South Wales. Entry to the Lucas Heights Research Establishment will be by ticket only.

Society members who desire to visit Lucas Heights should apply to the Secretary, The Pharmaceutical Society of N.S.W., "Science House," 157 Gloucester Street, Sydney.

ACID HYDROCHLORIC

The following "Urgent Notice To All Guild Members" was published in the N.S.W. Guild Service Bulletin of October 18:—

"Members' attention is directed to the following:

As a result of investigations carried out concerning the strength of so-called Acid Hydrochloric, it has been established that the substances available in Australia under the above title do not in fact fulfil the requirements of the British Pharmacopoeia. They are manufactured as industrial chemicals and are usually labelled as such; consequently, members are strongly advised to purchase **Acid Hydrochlor Dil** from their usual wholesaler, as the product will have been standardised to fulfil the requirements of the British Pharmacopoeia; further, members are cautioned regarding the storage of this product, which must be kept securely corked, otherwise it will increase in strength.

Leslie W. Smith, State President."

SIXTY YEARS A PHARMACIST

Seventeen pharmacists in New South Wales have been qualified for 60 years or more. They are:—

Date of Registration	Name	Address
17/2/1898	E. A. Ayres	33 Burton St., Concord
16/11/1899	R. D. Burgess	175 Spit Rd., Mosman
14/12/1897	H. D. B. Cox	34 Barton Rd., Artarmon
14/12/1899	F. M. V. Earle	10 McHugh St., Grafton
*18/1/1898	J. C. Everingham	31 Great North Road, Five Dock
16/12/1897	A. Farr	3 Larkin St., Roseville
14/10/1897	E. E. Ford	247 King St., Newtown
9/2/1899	F. W. Frewin	250 Glenmore Rd., Paddington
14/10/1897	A. M. Gabriel	4/2A Ithaca Rd., Elizabeth Bay
23/12/1897	C. G. McIntosh	40 Hardy St., South Ashfield, via Canterbury Post Office
*18/1/1898	G. J. Mortimer	Barker St., Casino
9/12/1897	A. E. Morton	576 Pacific Highway, Killara
23/12/1897	J. B. O'Brien	362 Catherine Street, Leichhardt
14/9/1899	S. C. Parker	11 Selwyn Street, Wollstonecraft
14/10/1897	A. Rogers	397 Parramatta Road, Leichhardt
26/5/1898	R. F. Stephens	P.O. Box 25, Bangalow
18/1/1898	T. J. C. Williams	99 Regent St., Redfern

* Also Dentist

FIRE DESTROYS PHARMACY FOLLOWING BOMB BLAST

On October 13 an explosion early in the morning rocked Werris Creek. Anthony Fitzgerald, son of Kevin Fitzgerald, chemist, was killed and his father's pharmacy was blasted to ruins, together with two other shops.

NEW! 3/4" Aluminium

Price Stripping

Plastic price tickets for above stripping in contrasting colours of Black, Blue and Red.

SPECIAL CHEMIST'S SET

Complete with prices from ½d. to £1

Comprising 100 ft. ¾ in. aluminium price stripping plus 50 dozen assorted plastic numbers and signs.

NOTE OUR PRICE: the lot £6/14/-

COLOURED INSERT FOR ABOVE STRIPPING At 25/- Per 100 ft. IN ALL COLOURS

Extra numbers always available, and may be bought separately . . . available from

EZI-CHANGE SIGNS

3 SHACKEL AVENUE, GLADESVILLE, N.S.W.
WX 3688, WX 4328 Box 3616, G.P.O., Sydney

"SURE-FIT"

FINGER STALLS—clip on

FINGER STALLS—tie on

POULTICE STALLS—surgical laced

WRIST GUARDS

All attractively carded

Pharmacists: Enquire from your regular Wholesaler for these lines

DORMAY CO. PTY. LIMITED

46 Alfred St., Milsons Pt., N.S.W. XB 8203.

NEW SOUTH WALES—*Continued*

Police investigating a blast that killed two people and demolished a business premises are following a new theory. They believe the explosion was caused by a petrol vapour bomb, not gelignite. They think the bomb was placed near the front of a Greek cafe.

Ten persons were injured in the blast, which reduced three shops—one the Greek cafe—and living quarters to smoking rubble and damaged two other shops.

Brisbane C.I.B. is keeping N.S.W. detectives informed of developments. In Brisbane detectives interviewed a Greek. The man, however, was unable to help in the investigation.

Earlier police had flashed to all police headquarters throughout Australia the description of a man they wished to interview. Detectives took this action after their investigation had set them on a definite line of inquiry. They are paying special attention to recent business transactions. Although detectives will not discuss the matter, it is understood that messages have been exchanged with the Brisbane C.I.B. on this aspect.

Police say there is little doubt that the explosive was set off near the cafe in which the Greeks were sleeping. The three Greeks who conducted the cafe took over on October 10. Townspeople say the trio had set out on a campaign to popularise their business.

So far, police have been unable to get a coherent account of what had happened.

Following police investigations, detectives on October 23, at Tamworth, charged a man with double murder in connection with the explosion and fire.

He was charged with murdering Vassile Perras, 35, and Anthony Fitzgerald, 13 months.

The man was also charged with having maliciously set fire to the dwelling house of Vassile Perras, well knowing that Perras was in it.

When he appeared in Tamworth Court of Petty Sessions on October 24, Soulos was remanded until October 27. Bail was refused.

FAR NORTH COAST PHARMACISTS' ASSOCIATION

Meeting held at "Apollo Hall," Lismore, on September 28, 1958.

Attendance—

Ballina—D. Enright.
Bonalbo—R. H. Grover.
Casino—C. H. Johnson, F. W. Johnson, W. Lockett, W. R. McDonald, J. Scully.
Coff's Harbour—J. David, A. R. W. Forsyth.
Grafton—F. Harper, J. D. Ada.
Kingscliffe—P. M. Poolman.
Kyogle—E. F. Steffensen.
Lismore—A. C. Brand, H. B. Frith, W. B. Grigg, H. Harper, J. Moen, C. Spillane, L. V. Wilkinson.
Maclean—H. Stanford.
Murwillumbah—D. Gielis, P. H. Outridge, E. Whittle, R. Whittle.
Sawtell—J. Blenkin.
South Grafton—J. C. Lane, J. R. Lane, L. R. Thomas, Mrs. Mary Thomas.
Tenterfield—G. Brookes.
Woolgoola—D. Clinch.
Yamba—T. H. Mitchell.

Visitors.—K. W. Jordan (Chairman, N.S.W. Guild Trade and Commerce Sub-Committee), and A. E. Conolly (State Secretary, F.P.S. Guild, N.S.W. Branch).

Whether you plan the replacement or addition of a simple counter case or a complete remodelling, you will receive the same helpful, courteous skilful service.

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Transportation costs prevent our carrying out modernisation of pharmacies in other States.

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Size: 8¾" x 7¼" x 4"

Cabinet: Steel—finished in plain white enamel, black and white, blue and white, red and white.

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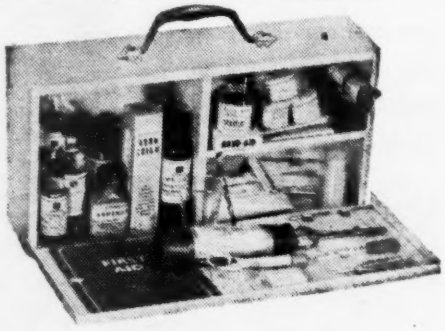

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Cabinet: Steel — finished in white enamel —can be fitted on wall. Fitted with a lock to keep contents from children.

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National advertising for Bex in the press, on the radio and with display material for retailers further creates new business every week in the year.

Show Bex and you'll sell it—use the displays available to you.

Bex

Powders & Tablets

Treasurer's Report.—Mr. Ada submitted the balance sheet, which showed a credit balance of £21/1/7.

Mr. Forsyth stated the difficulty of chemists in Bellingen, Urunga and Dorrigo being outside the present Zones. It was resolved to refer to the State Branch Committee this meeting's recommendation to enquire into the possible formation of a suitable Zone.

Mr. Eric Scott, O.B.E.—It was resolved that a letter of congratulation be forwarded from this meeting on the Queen's recognition of Mr. Scott's work.

P.M.S. Test Prescriptions.—Mr. Brand brought up the matter of certain prosecutions for P.M.S. Dispensing of Acid HCl. dil. of incorrect strength. Mr. Conolly said this would be dealt with by the Government Committee of Enquiry next week and was therefore sub judice. However, profitable discussions on dispensing tolerances and legal culpability took place.

Percentage Mark-ups were discussed and we were informed that a remit from the State Branch Committee would go to the Federal Council meeting in October—"that 50 per cent. should be the mark-up for M.F. Lines irrespective of parcel quality." We can expect the marginal increase on Larynoids next season.

The Heinz Food position was outlined.

Mr. Keith Jordan gave an inspiring and informative address on the **Trends in Pharmacy,** with increases and decreases recorded by the Statistical Bureau in different lines of pharmacy. Some were astounding and unfortunately cannot be printed. Each year is progressively worsening for pharmacy and remedial measures are due now—hence the **Publicity and Merchandising Campaign** now proposed. The comprehensive scheme under Guild control with Nichols Cuming's group as advertising consultants includes the "Women's Weekly," Sunday City papers, TV (City) and all country centres by radio. The mechanics of the scheme and co-operation of drug houses in collecting the ½ per cent. levy on purchases was explained and monies derived from each State will be spent in that State. Mr. David stated his experiences in institutional and specific advertising which provoked discussion and provided more data for the S.B.C. to consider.

Mr. Brand moved that the S.B.C. is to be congratulated on the Merchandising and Publicity Project and that all present will carry out the scheme. The motion was seconded by Mr. Spillane and carried unanimously.

Election of Office-Bearers.—Election of office-bearers resulted as follows:—

President—H. B. Frith.

Vice-Presidents—A. E. Brand, R. Whittle.

Hon. Secretary—L. R. Thomas.

Hon. Treasurer—J. A. Ada.

A vote of thanks was proposed to Messrs. K. W. Jordan and A. E. Conolly for their detailed and lucid explanations on all points raised. Carried by acclamation.

The meeting closed at 3.45 p.m.

PHARMACY BOARD

Monthly Meeting

The Pharmacy Board of N.S.W. met at 52 Bridge Street, Sydney, on October 14, at 8 p.m.

Present.—Mr. G. Costelow (Chairman), Dr. S. Wright, Messrs. E. Dempster, K. Cartwright, K. Thomas, G. Simpson, G. Mallam and G. Harman.

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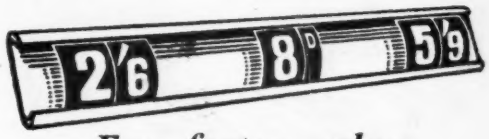

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Comprising 100 ft. ¾ in. plastic price stripping plus 50 dozen assorted plastic numbers and signs.

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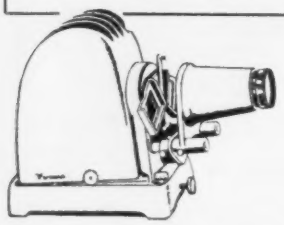

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NEW SOUTH WALES—*Continued*

Applications for Registration were approved as follows:—

(a) Having passed Qualifying Examination: Robert Guy Barnes, Margaret Anne Cochrane, Anthony George Confos, Sandra Lynette Dickinson, Pamela Margaret Fong, Graham Brooks Gilbert, Judith Gold, Garry George Graham, Barry Stuart James, Robert Joseph Kemp, David Douglas Learmont, Phillip John Lindsay, Barry Morris Marks, Michael Allen Macourt, Peter Thaw Martin, John Peter Murphy, Edwin Saul, and Barry Septimus Wellham.

(b) By Restoration: June Mary Smith and Charles Rowan McCulloch.

Name Removed under Section 9: It was decided to seek the approval of the Governor to restore the name of Gerald Haswell Griffin.

Section 11(e)—Foreign Chemists: Re E. Mifsud, of Malta, the Board decided to recognise the Certificate of the Medical and Health Department, Malta, dated 23/7/55, and to advise the University in appropriate terms.

Certificates of Identity were issued to Barry Morris Marks (to Great Britain), John Colin Chapman (to Great Britain), Graham Edward Reed (to Great Britain), Terence Patrick Pallett (to Tasmania), Graham Albert Watson Laver (to Great Britain) and Eric Bottle (to Queensland).

Poisons Act.—Deaths from the following poisons had been reported since last meeting, viz:—Oil of Chenopodium 1, Arsenic 4, Barbiturate 1, Nicotine 1, A.B.C. Liniment 1, Quinilbarbitone and Alcohol 1, Strychnine 1, Carbrital 1.

Leaving Certificates Accepted.—4.

Apprenticeship Indentures.—Registrations comprised four new indentures, six transfers, five cancellations and one resumption.

Correspondence.—From Pharmaceutical Association of Australia re Conference of Boards and kindred bodies, May/June, 1959. The Board nominated the President and Registrar to be its representatives at the Conference, and authorised an approach to the Department for provision of the necessary funds for subsistence and travelling expenses.

Department of Health, Queensland, forwarding copy of Poisons Regulations, 1958. Noted.

Civil Defence School—Letter from Under Secretary.—The Board nominated the President as its official representative and endorsed the Registrar's attendance if invited.

Presentation of Certificates of Registration.—The arrangements made for the holding of this ceremony on October 21 were noted.

PHARMACEUTICAL SOCIETY — *Council Meeting*

The Council of the Pharmaceutical Society of New South Wales met at "Science House," 157 Gloucester Street, Sydney, on October 7.

Present.—Messrs. K. H. Powell (Chairman), E. G. Hall, K. A. Cartwright, H. W. Read, S. E. Wright, W. R. Cutler,

S. Palfreyman, A. F. Winterton, J. F. Plunkett, G. G. Benjamin and Miss M. Sweeney.

Lecture on New B.P.—Mr. Winterton said the meeting on September 22 was very successful indeed. Many were standing all along the back of the hall and into the corridor. The hall was full to overflowing, mostly qualified persons being present.

The Chairman conveyed the thanks of the Council to Dr. Wright.

Lecture on "Chemotherapeutics of Cancer."—Arrangements were well in hand for this lecture, to be given on October 28.

Equipping of New Pharmacy Laboratories.—Proceeds of "Call" to date, £4,317/12/-.

First-Year Apprenticeship Examination.—It was reported that a paper had been found in the Great Hall, and another paper had been done by a female apprentice after the examination, in the pharmacy. It was decided not to include these papers in the official results; that is, they would not rank for a prize.

A total of 175 papers had been marked.

It was decided to obtain the results from examiner Gostelow, and afterwards to send the papers back to the apprentices, bearing the examiners' comments thereon.

Presentation of Registration Certificates.—For the second ceremony, to be held on October 21, it was decided to invite as official guests the examiners, namely, Mr. K. E. Thomas, Mr. H. W. Read, Mr. B. Brown, Mr. R. E. Thomas, Miss D. Large and Dr. S. E. Wright. Further, to invite Mr. Cliff Gostelow, Pharmacy Board; Mr. P. E. Cosgrave, Pharmacy Board; Professor R. H. Thorp, Mr. Dudley would be coming from Kodak and Mr. A. Benson from D.H.A.

It was further decided to invite the members of Council.

Supper to be arranged at Adams Hotel.

P.A.A. Conference, Adelaide.—Advice was received from the Pharmaceutical Association of Australia that the next meeting of the Association will be held in Adelaide from Monday, May 25, to Tuesday, June 2, 1959. Noted for discussion later in the year.

Proposed Pharmacy Week.—Mr. Plunkett said that a meeting had been held on the night of October 3. The Trocadero was available for one week for the sum of £1,750. It was impossible to stage an exhibition on purely ethical lines.

The Committee made the recommendation that the Guild be approached to see if it is interested in the holding of a Pharmacy Week; that is, whether the Guild and the Society should jointly investigate the matter further. This recommendation was adopted.

It was further decided to thank Mr. Field, of the Trocadero, for his quotation and to advise him that the proposal is being investigated.

Health Week.—Mr. Winterton said that Health Week would be opened on October 20 by His Excellency, the Governor. Mr. Winterton said he had been invited to the reception.

Correspondence.—From Mr. E. G. Larkin, Ashfield, conveying to the Society greetings from American pharmacy officers.

From Mr. K. J. C. Johnson, Chairman of the Committee of Institutional and Industrial Pharmacists' Group, reporting events concerning the I.I.P.G. It was decided that Mr. Winterton should attend the meeting, to be held on October 22.

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NEW SOUTH WALES—*Continued*

From Associate Professor S. E. Wright, Sydney University, advising that the prizes and medals for 1958 have been awarded as follows:—

Pharmaceutical Society's Gold Medal—Mr. M. R. Byrnes.

D.H.A. Prize.—Mr. M. R. Byrnes.

McCrory Medal for Dispensing.—Miss Janet Hume.

Kodak Prize No. 1.—Mr. F. G. Humphrey.

Kodak Prize No. 2.—Mr. G. Graham.

From Mr. R. J. Mitchell (Kodak), advising that he will be unable to attend the presentation ceremony, but suggesting that the Sydney Branch Manager, Mr. R. A. Dudley, might take his place.

From Mr. A. P. Benson (D.H.A.), advising Mr. Catt cannot attend the presentation ceremony. He had deputised Mr. Benson (Assistant Managing Director) to act for him.

From Director of Civil Defence, Sydney, advising that there will be a special study period for Emergency Medical Services at the Civil Defence School, Mount Macedon, Vic., from November 30 to December 5. Enquiries to be made if the study period would be different from that already attended by Society representatives.

From Australian Atomic Energy Commission, advising open days will be held at Lucas Heights on December 8, 9 and 10. Enquiring number of tickets required by the Society. Contact to be made with the Commission to enquire as to who should be invited. If members of the Society generally, then a notice to be published accordingly.

New Members Elected.—Bruce Fyfe Bathgate, Double Bay; Mr. Jan Borsky, Bondi Junction; Miss Helen Edith Buzacott, Burwood; Erol Francis Byrne, West Ryde; Arthur Hayden Cheeseman, Mascot; Miss Margaret Anne Cochrane, Kirribilli; Graham Bruce Croker, Lindfield; Christopher Ernest Bromley Davenport, Cronulla; Matthew Thomas Duane, West Ryde; Miss Elsie Olwen Gaulton, Vaucluse; Miss Patricia Hardie, Gordon; Geoffrey Maxwell Harper, Cammeray; William Brian Havilah, Oatley; Miss Beatrice Carmen Holme, Artarmon; Miss Janet Macgregor Hume, Manly Vale; Allan James Taylor Knox, Sydney; Miss Margaret Ann Lazner, East Sydney; John Evans Maine, Broken Hill; Peter Thaw Martin, Belmore; Warwick Robert Richards, Bellevue Hill; Geoffrey Stuart Robb, Parramatta; David John Tiller, Mortdale; and John Baylee Turnbull, Parkes.

Advanced to Full Membership.—David Edwin Cole, Liverpool, and Kerry Colefax Thew, Penshurst.

Associate Member.—Russell Edmund Victor Miller.

Library.—Dr. Wright recommended that the following books be purchased for the Society's Library at the University:—

"Pharmacy of Silicones," by R. Levin.

"Drugs: Their Nature, Action and Uses," Beckman.

"Emulsions: Theory and Practice," Becker.

"Textbook of Pharmacology," Drill.

"Disinfectants: Their Values and Uses," W. E. Finch.

It was resolved to purchase the books accordingly, through the official library, the Society to reimburse the library.

The meeting closed at 10.8 p.m.

VICTORIA

PERSONAL *and* GENERAL. — *State News*

Members in Victoria desiring publication of personal items of interest are invited to write or telephone details to the Editor (FJ 5161).

Birth.—Congratulations to Gilbert and Betty Le Plastrier, of Horsham, on the birth of a son, Philip, at the Wimmera Base Hospital, Horsham, on October 9.

MANAGERS AND RELIEVERS: OCTOBER LIST

Manager or Reliever	Pharmacy
Bartley, Mrs. N. M. ..	Mr. R. W. B. Long, Preston
	Mr. J. Roberts, Pascoe Vale
Beaumont, Mr. P. ..	Mr. W. E. M. Craig, Springvale
	Mr. J. E. Mitchell, Noble Park
	Mr. T. P. Lane, Daylesford
Benporath, Mr. L.	Mr. H. C. Henshall, Sth. Melb.
	Mr. W. G. Wilson, Hampton
	Mr. H. M. Shepherd, Sth. Melb.
Bohn, Mr. J. G.	Mr. D. L. Nuttall, Kyabram
	Mr. J. V. Williams, Nathalia
Brown, Miss B. L. ..	Mr. H. C. Henshall, Sth. Melb.
Brown, Mr. J. A. N. ..	Mr. K. J. Shoebridge, Mt. Beauty
Carter, Mr. D. B.	Mr. A. W. Cocking, Blackburn
Curtis, Mr. G. L.	Mr. D. C. Briggs, Yarrawonga
Cwirn, Mr. L.	Mr. B. B. Brown, Ascot Vale
Devlin, Mr. H. W. ..	Mr. D. J. DeMaria, Brunswick
Digby, Mr. J. W.	Mr. J. W. Findlay, Sale
Douglas, Mrs. A.	G. A. McDonald, Horsham
Dunn, Miss M.	C. W. Trethowan, Wycheproof
Everett, Mr. C. D.	Mr. D. R. Coates, Hastings
	Miss P. E. Penfold, Surrey Hills
Fleming, Mrs. D.	U.F.S. Dispensary, Richmond
Gardiner, Mr. J.	Mr. J. Barrow, East St. Kilda
Goldberg, Mr. A. H. ..	Mrs. O'Donoghue, Cheltenham
Gray, Miss B. D.	Mr. I. E. Jacob, Richmond
Grant, Mrs. A. E.	Mr. A. H. Mansell, Glenferrie
Hadden, Mr. J. L. ..	Miss M. P. Hayes, Reservoir
Hare, Mr. R. G.	Mr. C. M. Pleasance, Prahran
Harris, Mr. A. K.	Mr. J. V. Kennedy, Melbourne
	Mr. B. J. Daniel, Camberwell
Hatch, Mrs. M.	Mr. P. M. McKay, Maffra
Hodgson, Mr. F. H. ..	Mowat's Pharmacy, Port Melb.
	Mr. J. M. Hughes, Casterton
	Mr. W. R. Lumley, Chelsea
Holland, Mr. J. C.	Mr. R. Frazer, Altona
Inglis, Mr. I. R.	Mr. A. D. Hoogen, South Yarra
Jarvis, Miss	Mr. L. Long, Toorak
Kenney, Mr. W.	Batrouney Bros., West Melb.
	Mr. J. C. Arthur, Bairnsdale
Kiers, Mr. J.	Mr. C. M. Pleasance, Prahran
	Mr. B. F. Huntsman, Ashburton
Knell, Mr. W.	Mr. A. W. Marriott, Collingwood
Kulpa, Mr. D. M.	Mr. R. B. Lumley, Windsor
Lang, Mr. I. D.	Cheltenham Home, Cheltenham
Lennon, Mr. C. B. ..	Mr. B. A. Scally, Hawthorn
Lindell, Mr. E.	Mr. A. W. Cocking, Blackburn
McDonald, Mr. D. W.	Mr. P. Bartold, Healesville
	Mr. E. F. Abfalter, Elmore
McLean, Miss H.	Miss E. C. Thompson, Thornbury
McPherson, Miss H. ..	U.F.S. Dispensary, Brunswick
Miller, Mr. H.	Mr. A. E. Jaggs, Moorabbin
Mitton, Mr. J. W. ..	Mr. G. A. Whitford, Jeparit
	Mr. G. H. Ross, Mansfield
Morris, Mr. C.	Mr. E. L. Fisher, Melbourne
Morris, Mrs. E. E. ..	Mr. J. N. Longden, Kaniva
	Mr. J. E. Mahony, Belgrave
Neuss, Miss B.	Mr. H. R. Theobald, Hamilton
Proctor, Mr. N.	Mr. W. F. Carroll, Melbourne
Redapple, Mr. A.	Mr. L. B. Allen, Collingwood
Rennie, Mrs.	Andrew's Drug Store, Melbourne
Richards, Mr. J. I. ..	Mr. D. B. Lewis, Balwyn
Shannon, Mr. H. R. ..	Mr. D. W. Tattam, Kew
Sharp, Mr. W.	Mr. G. L. Stott, Rosanna
Sibel, Mr. A.	Mr. L. Rotman, Huntingdale
	Mr. H. E. Matthews, Brunswick
Stone, Mr. A.	Mr. A. Miller, East Prahran
Stokie, Mr. D. G.	Mr. B. B. Fry, Elsternwick
Swedosh, Mr. W.	Mr. J. A. Pratt, Parkdale
Ward, Mr. R. G. M. ..	Mr. D. McK. Hutchinson, Bentleigh
	Mr. D. J. DeMaria, Brunswick

Mr. J. Garvin has appointed **Mr. G. W. Blackman** manager of his pharmacy at Moonee Ponds.

Mr. E. J. Dawes is now on the staff of Mr. and Mrs. J. R. Oxley's pharmacy, Bentleigh.

Mr. A. S. Cattanach has appointed **Mr. K. W. Shaw** manager of his pharmacy at Merlynston.

Mr. D. B. Carter is now manager for Messrs. S. and V. Gandolfo, Brighton.

Miss H. Aberdeen has returned from abroad and is relieving at the Dispensary, Wonthaggi.

Mr. P. J. Tuohy has accepted a position with Mr. L. Rotman, Huntingdale.

Mr. W. M. Morton has resigned his position as manager of Mr. J. R. Creelman's pharmacy, Goroke, and **Mr. K. W. Forbes** has taken his place.

Business Changes

Messrs. Taylor and Taylor closed their pharmacy at 70 Bridge Street, Ballarat, as from September 30.

Mr. K. F. Gardiner, of Coburg, has closed his pharmacy. The premises were sold and Mr. Gardiner has gone out of business for the present.

Mrs. P. Woodgate has notified the alteration of the number of her pharmacy from 260B to 455 Albion Street, West Brunswick.

Mr. S. S. Goble has taken into partnership Mr. and Mrs. J. L. Powell at the pharmacy, 1196 Nepean Highway, Rye.

Mr. J. S. Richter has closed his pharmacy at Murrayville.

The following pharmacies have changed hands:—

Mr. F. Ryan, from Mr. L. F. Howard, 868 Sydney Road, Brunswick.

Miss J. Gibney, from Miss L. M. Browne, High Street, Bradford.

Mr. N. R. Standfield, from Mr. C. F. W. Sparre, 110 Napier Street, St. Arnaud.

Mr. M. Gandolfo, from Mrs. N. Kellas, 9 Market Street, Box Hill.

Mr. B. A. Scally, from Mr. M. Gandolfo, 627 Riversdale Road, Surrey Hills.

New pharmacies have been opened at the addresses indicated:

Mr. and Mrs. R. J. Constable, 486 Bell Street, Pascoe Vale.

Mr. E. Marcou, 3 Keith Street, Moorabbin.

Mr. L. J. Romey, 74 Malop Street, Geelong.

Mr. R. A. Clementson, 36 Devon Road, Pascoe Vale.

A new U.F.S. dispensary has been opened at Centreway, Yallourn, with Mr. W. A. Buckley as manager.

VICTORIA—*Continued*

ENGAGEMENT

Mr. and Mrs. H. J. A. Winterton, of John street, Cottesloe, Perth, have pleasure in announcing the engagement of their daughter, Marjorie Avann Winterton, to Bruce Arthur, second son of Mr. and Mrs. E. A. Moore, of Cantala avenue, Caulfield. The young couple, who will live in Melbourne after their marriage, met on their way to England and U.S.A.

Mr. Bruce Moore and his brother, Daryl, spent over 12 months abroad gaining further experience in pharmacy. Bruce spent the first three months after returning to Australia in Perth, where he did locum work.

WEDDING

The marriage took place at St. Andrew's Presbyterian Church, Deniliquin, N.S.W., on October 18, of Miss Shirley McAllister, of Deniliquin, and Mr. Rolfe Mann, of Sea Lake. The bridal party included Miss Heather Aberdeen, of Leongatha, recently returned via Canada and the United States, from 18 months overseas in Great Britain. The couple plan to settle in Deniliquin.

DRUG THEFT FROM PHARMACY

Forty bottles of drugs, some containing heroin and cocaine, were stolen from Hanton's pharmacy, Seaford, on Sunday, September 28. The thief used a duplicate key to enter the premises.

The theft was discovered by the manager of the pharmacy, Mr. J. McKnight, when he arrived to open up at 10.30 a.m. on September 30. He found the front door of the pharmacy open and three people waiting to be served.

A small amount of cash was also taken from the pharmacy.

LONG SERVICE LEAVE

In our issue of September 30 (page 1095) we referred to the deduction which must be made from the payment due to the beneficiary of a deceased employee entitled to long service leave.

It is important to note that, according to advice received from the P.D.L. solicitor, the rate of pay applicable in any such adjustment is **the actual present rate of pay,** not the award rate.

The amount should be paid to the solicitor acting for the estate, who should produce what is called a Section 14 Certificate. This is a certificate that all duty has been paid in connection with this amount.

When forwarding payment to the solicitor for the deceased estate, the letter should state the relevant number of weeks' salary to which the deceased was entitled for long service leave, and show the deduction made for wages tax (at the rate of 1/- in the pound).

DISCUSSION GROUP

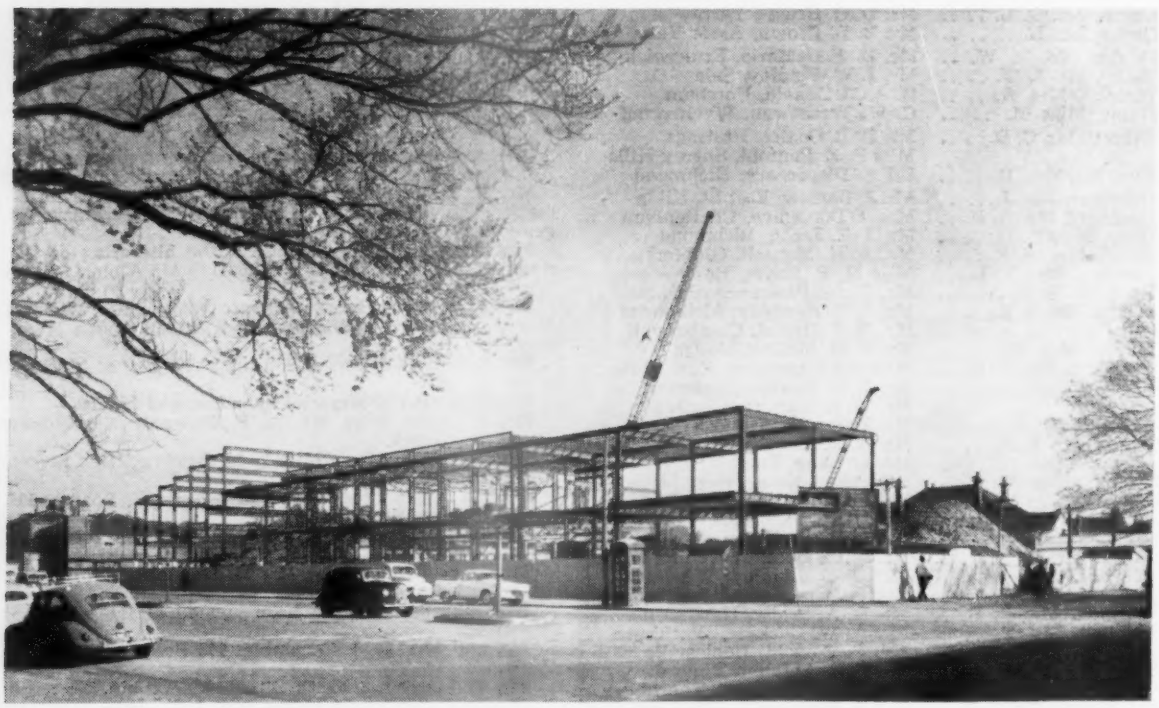
There was a large attendance at the October meeting, when Dr. Archie S. Anderson, a well-known eye specialist, was the guest speaker. The President of the Group, Mr. David Lumsden, was chairman.

Dr. Anderson quickly won his audience with his many witticisms and easy manner, and in humorous vein spoke of his early days at the college as a medical student.

The lecture was illustrated with a number of excellent slides dealing with various eye infections and diseases, and their appropriate treatment was discussed.

The speaker answered many questions and gave much practical advice to the pharmacist on the eye generally. Members voted Dr. Anderson's talk as one of the best of the series, and Mr. Arthur Moore proposed a hearty vote of thanks on behalf of those present.

—G. K. TRELEAVEN, Secretary, Discussion Group.



THE NEW VICTORIAN COLLEGE OF PHARMACY GROWS
View taken from Sydney Road, looking along Walker Street frontage (to left).

COSCOPIN

TRADE MARK (NOSCAPINE)

For Effective Control Of Cough

available as Linctus and Lozenges

Coscopin inhibits the cough reflex. It has the advantage over codeine that it is a mild bronchodilator, a mild respiratory stimulant and does not cause constipation.

COSCOPIN LINCTUS is pleasantly flavoured and contains 25 mg. of noscapine in each 2 teaspoonfuls (7 ml.). It is available in bottles of 4 fl. oz. (114 ml.) and 2 litres.

COSCOPIN LOZENGES each contain 25 mg. of noscapine and are available in prescription packs of 20.

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To assist you when you do the following new dosages and packs of "HERMETTE" ampoules have been introduced in addition to our normal range.

Atropine Sulphate	0.4	mgm.	1 ml.	Boxes of 10 and 100
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Atropine Sulphate	0.8	mgm.	1 ml.	Boxes of 10 and 100
Atropine Sulphate	1.2	mgm.	1 ml.	Boxes of 10 and 100
Morphine Sulphate	10	mgm.	1 ml.	Boxes of 10 and 100
Morphine Sulphate	16	mgm.	1 ml.	Boxes of 10 and 100
Morphine Sulphate	20	mgm.	1 ml.	Boxes of 10 and 100
Papaveretum	20	mgm.	1 ml.	Boxes of 10 and 100
Papaveretum	10	mgm.	1 ml.	Boxes of 10 and 100
Papaveretum 20 mgm. and Hyoscine 0.4 mgm.			1 ml.	Boxes of 10 and 100

Further lines in Metric doses will be made available when required.

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BABY FOODS in Australia are HEINZ 57

OBITUARY

Franz Adolph Guenther

It is with deep regret that we announce the death of Mr. F. A. Guenther, of Numurkah, which occurred at Numurkah and District Hospital on October 2.

The late Mr. Guenther was apprenticed to Mr. H. H. Vail, of Chapel street, Prahran, in December, 1902, and qualified in October, 1907. He took over the business of Crawford's Pharmacy at Numurkah in the following year and continued in business there until the time of his death.

Mr. Guenther was actively associated with the public life of Numurkah and there were few of the district's organisations which he was not a member. He was also a gifted musician and on many occasions led the Numurkah Choral Society to success in State competitions.

The late Mr. Guenther was 72 years old at the time of his death. He is survived by his widow and two daughters, to whom we extend our deepest sympathy.

HEALTH WEEK SUPPORTED

Dangers to Children Emphasised

"The Age" on September 22 published this paragraph under the heading—"Chemists Back Health Week":—

"Carelessness by parents with household poisons and medicines was a frequent cause of home accidents, the president of the Pharmaceutical Society of Victoria (Mr. Eric Scott) said yesterday.

"There is no substitute for extreme care in keeping dangerous substances beyond the reach of children," he added.

"Every pharmaceutical chemist in Victoria is wholeheartedly behind this year's Health Week effort to promote safety in the home."

Most chemists had personal experience of distressing cases of accidental poisoning of small children through swallowing substances such as kerosene—the main source of danger.

Other poisons taken included pesticides, household cleaning agents, and medical tablets or mixtures.

Even ordinary aspirin could be fatal to a child if taken in excess."

GOODS STOLEN FROM ROCKE, TOMPSITT & CO. LTD.

Four Men Convicted of Larceny

After a retirement of five hours a General Sessions jury at Melbourne on October 24 found four men guilty of larceny, as servants, from Rocke Tompsitt & Co. Ltd., Flinders Street, Melbourne.

The jury added a strong recommendation to mercy in each case.

They are John Charles Snelling, 45, driver, of Bowler Street, Auburn; Bernard Rodber, 39, temporary mail officer, of Orrong Road, Toorak; Ernest James Howell, 31, storeman, of Ludstone Street, Hampton; and Gilbert Clarence Allan, 65, storeman, of Chomley Street, Prahran.

The court was told during the trial that about £10,000 worth of goods had been stolen from the company's warehouse in four or five years.

The Crown alleged chemists' supplies, stolen from Rocke Tompsitt & Co. Ltd., had been found at the homes of the accused men.

It was also alleged that Snelling planned the thefts with checkers, an assembler and storemen, and that the stolen goods were sold to two chemists, one at Ashburton and the other at St. Kilda.

On October 29 Judge Mulvany sentenced Snelling to 12 months' gaol, Rodber to nine months and Howell to six months. Allan was released on a £20 bond for three years.

WARRNAMBOOL CHEMIST RECEIVES CITIZENSHIP AWARD

The "Warrnambool Standard" of October 10 carried an illustrated reference to an interesting ceremony performed by the Minister of Public Works (Sir Thomas Maltby), in presenting Citizenship Awards at a "Civic Recognition" ceremony in the Warrnambool Town Hall on October 9.

The ceremony, attended by representatives of Warrnambool organisations, was to recognise officially Warrnambool's "Premier Town" win.

Amongst those honoured was Mr. H. W. Shilton, Chemist, of Warrnambool, and that his award was well merited may be gauged from the following list of his achievements:—

1. Primarily responsible for the inception and development of 25 lawn tennis courts and president for the past eight years.
2. Honorary Secretary of the Lyndoch Old Folks' Home for one year, committeeman for four years, and subsequently an honorary life member.
3. Chairman of the Cancer Appeal for the Portland Electorate, which raised over three times its initial quota.
4. Organiser of a yearly homes exhibition, of which proceeds are forwarded to charities.
5. Seven years treasurer of Warrnambool Surf Life Saving Club and honorary member of same.

For some years Mr. Shilton was a member of the Victorian State Branch Committee of the Guild.

We congratulate Mr. Shilton on his public-spirited activities.

PHARMACY IN THE SKIING FIELDS

Mr. Julian A. N. Brown, who operated a small pharmacy at Falls Creek in the Mt. Beauty area during the winter skiing season, has sent us some interesting details of his experiences.

Mr. Brown was the manager of the Ski Lodge, and, by approval of the Pharmacy Board, set up a pharmaceutical service in his own right and in a self-contained portion of the Lodge.

The pharmacy was open for three hours each day—9 a.m. to 10 a.m., 1 p.m. to 2 p.m. and 5 p.m. to 6 p.m. These hours and the central location of the building in the village of Falls Creek enabled skiers to make their purchases on their way to and from the ski runs. The result, from a business point of view, was satisfactory.

"The Shop" consisted of two lockable show cases. Special provision was made for storage of poisons, Dangerous Drugs and Specified Drugs.

Large quantities of elastic bandages, liniments and associated articles for treating sprains and other minor injuries were sold.

Sunburn creams, lotions, sun glasses and a normal range of toiletries, cough mixtures and headache tablets were in demand.

The value of the pharmaceutical service in the area was demonstrated. During the winter it was possible because of the availability of supplies of the necessary drugs to treat two cases of pneumonia in their early stages. Both responded quickly and hospitalisation did not become necessary. Other cases of illness were treated by visiting medical practitioners, thereby obviating the discomfort of transporting sick people in sledges to the snow line and from there by ambulance to the medical centre at Mt. Beauty. The rescue service however was called into use on a number of occasions when skiers suffered broken legs or other injuries.

Mr. Brown reports that the usual procedure in case of a broken leg or bone was to bring the injured skier in on a special sledge which two skiers could manage down all but the steepest slopes. Plaster is applied at the first aid post and morphia administered if necessary. The accident cases were then sent to Mt. Beauty for X-ray and further treatment.

TWO Designs
in High Grade
Greg-Steel
Spatulas
Blade Sizes:
3½ in.—12 in. long

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Special ointment Spatulas — 3 in., 4 in., and 5 in. blade.
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Made in Australia by
GREGORY STEEL PRODUCTS PTY. LTD.
25 JOHNSTON STREET, COLLINGWOOD
Supplies obtainable from all leading Druggist Supply Houses

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MEDICATED
WINE TONIC
Made from
High Grade Malt Extract, Fine Old Wine, etc.
Obtainable throughout Australia:
ALL WHOLESALE DRUGGISTS AND CHEMISTS
Suppliers for:—
New South Wales — Wm. Delany & Co. — — — — — Sydney
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West Australia — D.H.A. (W.A.) Pty. Ltd. — — — — Perth
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ARNOLD BROS.
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VICTORIA—*Continued*

Over 20 cases requiring first aid for minor injuries were treated in the pharmacy without charge. Mr. Brown expects to extend the range of service and supplies in the next season.

SUPPLIES OF RECTIFIED SPIRITS TO RETAIL PHARMACEUTICAL CHEMISTS

At the request of the Collector of Customs, Victoria, we publish below the text of a letter sent from the office of the Collector of Customs, 400 Flinders Street, Melbourne (Victoria), on October 17, 1958, to all Victorian wholesale distributors of rectified spirits dealing with chemists—

Excise Tariff Item 2(M)—Spirit for Use by Chemists

In 1952 action was taken, mainly because of the growing tendency on the part of chemists to purchase prepared tinctures, to restrict, as a general rule, supplies of 2(M) spirits to chemists under the provisions of Excise Regulation No. 146 to two (2) gallons per month.

During 1957 a survey was made in order to gain some idea of the trend of spirit usage in that field. As a result of this survey it was revealed that by far the majority of chemists purchased spirits in quantities of one (1) gallon or less per month. The reports indicated also that the Pharmaceutical Association of Australia and affiliated bodies were generally in agreement that a quantity of one (1) gallon per month would satisfy requirements in the majority of cases.

Consequent upon further correspondence on this matter between the Department and the Pharmaceutical Association of Australia it has been decided to further restrict supplies of spirit delivered to chemists to one (1) gallon per month as a general principle.

In cases where a chemist satisfies me that his legitimate requirements exceed that quantity I am prepared to approve delivery in excess of one (1) gallon per month.

It has been decided also that, in order to assist chemists in meeting variations in usage and delivery problems in isolated areas, deliveries of three (3) gallons of spirits for a three-monthly period may be allowed upon request, where the circumstances warrant such action.

To obviate the necessity for the cancellation of all existing permits for monthly quantities in excess of one (1) gallon, I shall be glad if you will take action to ensure that on and from November 1, 1958, all such permits are amended to read:—

"A maximum quantity of one (1) gallon per month."

and that deliveries are not made in greater quantities without the approval of this Department.

Chemists' organisations are being advised accordingly and requested that due publicity be given to this determination.

PHARMACY BOARD

Monthly Meeting

The Pharmacy Board of Victoria met at 360 Swanston street, Melbourne, on October 8, at 10 a.m.

Present.—Mr. W. R. Iliffe (President) in the chair, Messrs. S. J. Baird, H. A. Braithwaite, A. W. Callister, K. Hartley, N. C. Manning, W. Wishart, F. C. Kent (Registrar), R. H. Borowski (Deputy Registrar) and T. G. Allen (Minutes Secretary).

Correspondence.—Formal correspondence was tabled and the following letters were dealt with:—

From a candidate who had passed in two subjects at the Final Examination prior to the introduction of the new Regulations, requesting permission to present for four subjects at the November Examination, being an ex-serviceman. Application granted.

To a number of packers and distributors of poisonous substances and preparations, drawing attention to the

requirements of the Poisons Regulations in relation to packaging and labelling, and requesting that these be complied with forthwith. In some instances instructions were given that the offending containers be withdrawn.

To the Department of Health, lodging protest against late publication of Pharmaceutical Register and Poisons Lists. Reply stating that late printing of annual registers has been cause of considerable dissatisfaction to many registering authorities, and the question is to be discussed with the Government Printer.

To a country chemist, approving of prescription card system submitted by him.

To Inspector Ahern, conveying good wishes on his recent marriage.

To a drug firm, requesting further consideration of the matter of labelling of vials of a substance which was a component of a hair preparation.

To the Vic. Branch of the Guild, conveying ruling re labelling of various types of poisonous containers. A member of the Board stated that he had been asked by the Guild Executive for an opinion as to whether a loose label inserted inside a plastic container was acceptable for dispensed products. The Board directed that a reply be sent indicating that the Board considered this type of labelling undesirable for dispensed products and contrary to the Regulations for substances controlled under the Poisons Regulations.

To the owners of shop premises in a country town, instructing that the word "Chemist" be removed as a chemist was not practising there. A reply received intimating that the request would be complied with.

To a U.F.S. dispensary, pointing out the necessity for ensuring that adequate qualified staff was employed for the purpose of supervision of sales of poisons.

Formal Business.—The following formal business was transacted:—

Application for Registration: David William Garde, Leslie Albert Fred Grant, Gerald Kilburn Hall, Inara Edite Kazins, Urvine Ian Lucas, Brian William O'Laughlin, Douglas George Pearson, Edward Bennie Potts, Nina Shiffman (Mrs. N. Pose), Ian Maxwell Stuart, Edward Ian Taylor, John David Veal, Florence Elaine Jones, Mary Agnes Gartlan, Helen McGregor Lester, Nea Marguerita O'Malley, Harry Glickman. Final Exam., Vic., 9/9/58: Wayne Gordon Hinton, Ph.Bd., N.Z.; Donald George Telfer, Ph.Bd., S.A.

Restoration of Names to Register: 1.
Managers and Relievers Notified: 47.
Business Changes Notified: 4.
New Pharmacies Opened: 7.
Pharmacies Changed Hands: 2.
Apprenticeship Indentures Registered: 2.
Apprenticeship Indentures Transferred: 4.
Apprenticeship Indentures Cancelled: 1.
Certificates of Exemption Issued: 2.
Certificates of Identity Issued: 1.
Opium Permits Issued: 10.
Permits to Purchase Cyanide Issued: 2.
Licences as a General Dealer in Poisons: 5.
Licences to Sell Poisonous Substances Issued: 15.
Licences for Hospitals to Possess Dangerous Drugs: 2.
Early Entries, November Final Examination: 56.

Illegal Sale of Specified Drugs.—A letter was received from the Pharmaceutical Society stating that it had received many reports alleging that Specified Drugs were being sold in some areas without prescriptions, and requesting that the matter be investigated. It was resolved that the Society be thanked for drawing attention to the matter and that a thorough investigation should be undertaken.

Propylhexedrine.—The Registrar said an inquiry had been received as to whether Propylhexedrine was covered by the Second and Fourth Schedules to the Poisons Act 1928.

Mr. Manning advised the Board that he had made full inquiry and was reliably informed that this substance was a derivative of Beta amino propylbenzene and therefore came under control.

For all types of point-of-sale advertising that really works contact

ROYCO

(AUSTRALIA) PTY. LTD.
9-15 Queensbridge Street, South Melbourne S.C.4

"Point-of-sale" advertising means an immediate upward trend in the sales chart.

The creation of sales-winning displays, backed by the kind of merchandising counsel that only long experience makes possible is pre-eminently a matter for Royco, acclaimed the national leaders in point-of-sale display merchandising.

Royco offers attention-winning sales-producing services, each of which can help you achieve greater dominance in your particular market.

ROYCO COMPLETE SERVICE

Sales Promotion Division: Window Displays • Showcards—designs and copy • Posters • Ticket-writing • Signwriting • Silk screen printing.
Constructional Division: Shop fitting—store layout • Display units • Cut-out letters (any material) • Exhibition stands • Window units.

A Pill with Many Uses

GREEN LABEL PILLS

Six plastic containers in an attractive counter display outer.

Cost 88/10d. doz.
Retail 12/6

Advertised extensively in the weekly and monthly press.

Stocks now available from all wholesalers in Australia.

GET YOUR STOCKS NOW

Manufactured by Green Label Pharmaceuticals
30 Russell Street, Melbourne

VICTORIA—*Continued*

Pharmaceutical Association.—Mr. Braithwaite reported that the next meeting of the Pharmaceutical Association would be held in Adelaide from May 25 to June 2, 1959. A Conference of Pharmacy Boards would be held in conjunction with the meeting. P.A.A. was inviting members of pharmaceutical organisations to submit remits and to advise as soon as possible the names of representatives who would attend. Noted for further consideration.

Medico-Pharmaceutical Liaison Committee.—Mr. Braithwaite reported that a meeting of the Medico-Pharmaceutical Liaison Committee was held on Monday, October 6. A number of matters of joint interest was considered, and a full report would be prepared for presentation.

Dento-Pharmaceutical Liaison Committee.—Mr. Hull reported that he attended a meeting of representatives of the Dental Association on September 22. It was decided that a Liaison Committee be formed. Dr. L. F. Heine was appointed Chairman and Mr. Walker Honorary Secretary. Matters discussed included the prescribing by dentists; fluoridation of water supplies; lectures on dental health to pharmacy students; dental formulae, etc. Report received.

Financial.—The Hon. Treasurer presented the monthly financial statements, and accounts totalling £1071/19/7 were passed for payment.

The meeting then terminated.

PHARMACEUTICAL SOCIETY — *Council Meeting*

The Council of the Pharmaceutical Society of Victoria met at 360 Swanston street, Melbourne, on October 1, at 10 a.m.

Present.—Mr. F. W. Johnson (Vice-President), Mrs. P. A. Crawford, Messrs. S. J. Baird, A. G. Davis, A. L. Hull, L. Long, C. N. McLeod, J. R. Oxley, K. Ramsay, C. P. A. Taylor, F. C. Kent (Secretary), T. G. Allen (Minutes Secretary) and R. H. Borowski (Assistant Secretary).

In the absence of the President, Mr. Scott, the Vice-President, Mr. Johnson, occupied the chair.

Correspondence.—Formal correspondence was tabled and the following letters were dealt with:—

From a member in another State, seeking advice in regard to a system for the control of drugs in hospitals. The Secretary said that the inquiry had been referred to the Honorary Secretary of the Society of Hospital Pharmacists who had undertaken to reply to the inquiry.

From a country chemist, acknowledging receipt of a letter from the Society and undertaking not to repeat advertisements relating to dispensing services to which the Council had taken exception.

From a suburban chemist, notifying that in response to a request he had removed from his window a sign which the Council had pointed out was contrary to the standard of professional advertising desired by the Society.

From a member of the public, asking for details of the pricing code. Advised that this could not be supplied.

From the Third Pakistan Pharmaceutical Conference, re conference to be held at Karachi from November 28 to December 2.

To successful candidates at the recent Final Examination, inviting them to join as full members.

From Mr. F. Montegano, presenting to the Library a copy of "L'Informatore Farmaceutico Italiano." The Secretary said that this was proving of very considerable assistance in connection with the translation of foreign prescriptions, and he referred to the large number of these that were dealt with each month. Members of the Council said this was a valuable service to members

and a special vote of thanks was recorded to Mr. F. H. Burton, who undertook the work.

To Mr. L. B. Allen, conveying sympathy in his recent illness.

To Mr. E. C. Dempster, congratulating him on his election as Mayor of Hamilton.

From the Pharmaceutical Society of Queensland, forwarding copy of Annual Report.

To Mr. S. A. Downie, Adelaide, expressing appreciation of arrangements made by the South Australian Section "O" Committee for the recent A.N.Z.A.A.S. meeting and for the hospitality and arrangements generally for the comfort of visitors.

From Monsanto Chemicals (Aust.) Ltd., donating £250 to the College of Pharmacy Building Fund. An appropriate letter of thanks was forwarded.

From Gair & Brahe, Solicitors, forwarding cheque being legacy under the will of the late Mr. F. N. Pleasance. Receipt of this was acknowledged and it was intimated that the money would be paid into the Building Fund.

From Mrs. J. A. Tait and family, thanking the Council for message of sympathy on the death of Mr. G. W. Tait.

From the family of the late W. W. Dawson, expressing thanks for sympathy in a recent bereavement.

From Mr. Walter Gear and family, thanking the Council for a message of sympathy.

From Mr. C. M. Davies, of Morwell, advising that a new agreement had been signed with the Morwell Hospital, and expressing thanks for assistance given by Mr. Long and the Secretary in negotiations with the hospital.

From the University of Melbourne, advising that medical students would commence practical work at the College of Pharmacy on November 3.

New Members Elected.—Full Members: Daniel Patrick Buckley, Paul Court, David William Garde, Charles Robert Linton, Donald George Telfer.

Transferred to Full Membership: Shirley Jean Bowman, Bessie Flora Davies, Brian William O'Loughlin, Douglas George Pearson, Nina Pose (nee Shiffman), Ian Maxwell Stuart, Edward Ian Taylor.

Professional Advertising.—Further consideration was given to this matter. A report was received concerning the objection of a member to comply with a request that he remove a sign from his window to which exception had been taken. He alleged that more serious practices were indulged in and were not being checked. A long discussion ensued, and it was resolved that a further appeal be made to the member in question to remove the offending sign, pointing out that the Council was endeavouring to obtain the co-operation of all members in eliminating unprofessional conduct and advertising. It was further resolved that other matters referred to by the member be investigated.

Library.—It was resolved on the recommendation of the Hon. Librarian, Mrs. Crawford, that the following books be purchased for the Library:—

A Textbook of Practical Botany, by R. C. McLean and W. R. I. Cook.

A Textbook of Theoretical Botany, by E. C. McLean and W. R. I. Cook, 2 volumes.

Soil Conditions and Plant Growth, by E. J. Russell, 8th Edition.

College Building Appeal.—A report on the progress of the financial appeal was presented to the Council by the Appeal Director. This indicated that £49,000 had been contributed by approximately 560 members. A considerable number of cards were still in the hands of canvassers, and efforts were being made to finalise the primary phase of the appeal. Arrangements for the conduct of the appeal in country areas were then discussed and details of forthcoming visits to various centres were agreed upon.

Donation From Sigma Co. Ltd.—The Vice-President drew attention to the offer of Sigma Co. Ltd. made during the month to donate the sum of £15,000 to the Building Fund. This money was to provide the museum in the new College, and it was stipulated that this room

IN

CONSTANT DEMAND

BCM COMPLEX MINERALS

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HEPASOL COMPOUND

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Introducing . . .

ENERTONE

ADULT FORMULA

WARNING: Enertone is now available in both "Infant" and "Adult Formula," each branded accordingly. DO NOT CONFUSE.

COMPOSITION ENERTONE—ADULT FORMULA

Pro-Vita Weat Harts—finely ground	50%
Soya Bean Flour Stabilized	9%
Medicinal Brewers Yeast	1%
Special Semolina—Stabilized	40%

The whole par-dixtrinised, i.e. partly pre-digested.

CHEMICAL ANALYSIS

Protein First Class	18%
Minerals	2.8%
Wheat Germ oil	4%
Carbohydrates	70%
Cellulose	0.9%
Sodium	0.722%
Iron (as Fe)	11 mgms. per oz.
Moisture when packed	5.3%

VITAMIN ANALYSIS

Vitamin A	75 I.U. per oz.
Thiamin	1.09 mgm. per oz.
Riboflavin	0.43 " " "
Niacin	7.40 " " "
Pyridoxine	10 " " "
Choline	25 " " "
Inositol	10 " " "
Vitamin E	4 " " "

Unsaturated Essential Fatty Acids. Enertone Adult Formula contains 6.5% of **Linolenic** and **Lenoleic** Fatty Acids, and is **Cholesterol Free.**

SPECIFIC THERAPEUTIC INDICATIONS

All Semi-Liquid Diets (as a thin gruel), Gastric and Duodenal Ulcers, Liver Disorders, Low Sodium Diets, Cardiac and Circulatory conditions, Gastro-Enteritis, Hepatitis, Under-developed children over 15 months, All patients recovering Physical Depletion after illness, of Special Value in Geriatrics. Where often many of the above conditions are combined in mild forms.

ENERTONE—ADULT FORMULA has many appetising uses. They are—As a thin gruel for Semi-Liquid Diets and as a between meal beverage. Porridge, Boiled Custards, Baked Custards, or Blanc Mange—Recipes in every packet. This variety of Special dishes is a real boon to those on restricted diets, while the appetising flavour is appreciated too.

PACKINGS. 8 oz. packets 1/9, 24 oz. packets 4/6, available from all Wholesale Drug Houses.

MANUFACTURED BY

Pro-Vita Products Pty. Ltd.,
422 Collins Street, Melbourne.

COMPREHENSIVE RADIO ADVERTISING
ALL CAPITAL CITIES

VICTORIA—*Continued*

should be named the Sigma Museum. This was an exceedingly generous gift and the Council was very grateful to the company and its directors for this expression of interest and goodwill. It was resolved that a special letter of thanks be sent to Sigma, thanking the Directors for the gift and accepting the suggestion concerning the naming of the museum.

Dento-Pharmaceutical Liaison Committee.—Mr. Hull reported that in company with Mr. Iliffe (Pharmacy Board) and Mr. Keith (Guild) he attended a meeting with representatives of the Victorian Branch of the Australian Dental Association, on September 22. At the meeting the desirability of establishing a liaison committee was affirmed and a committee was thereupon set up. Mr. Sutcliff, President of the Victorian Branch of the Dental Association, welcomed the members. A number of matters of joint interest were considered. These included: (a) regulations relating to Dangerous and Specified Drugs as they affect the dental profession; (b) fluoridation of water supplies; (c) prescribing by dentists; (d) superannuation for professional groups; (e) lectures on dental subjects to pharmacy students.

Mr. Hull said that Dr. L. F. Heine, who was a pharmaceutical chemist as well as a registered dentist, was appointed Chairman of the Committee, and Mr. W. G. Walker, a dental representative, was appointed as Secretary. A very friendly atmosphere prevailed. The Chairman thanked Mr. Hull for his report.

College Building.—The Hon. Treasurer, Mr. Baird, reported that good progress was being made with the Parkville building. The position in regard to bricks was explained and it was agreed that supplies be obtained from Ballarat. Difficulty concerning the completion of forms required by the Board of Works about the nature and volume of laboratory waste was referred to and it was agreed that Mr. Baird and Mr. Davis in company with the architect should interview officers of the Board of Works in an endeavour to resolve the question.

Test Prescriptions.—Further consideration was given to reports concerning test prescriptions dispensed for officers of the Commonwealth Health Department.

In some instances reports of the analyses made to check samples on behalf of members differed substantially from those of the official analyst. The members of the Council expressed concern at the position in which a member might be placed. One member had written outlining his experiences and stating that the care with which the prescription had been dispensed eliminated the possibility of inaccuracy in the dispensed product as indicated in the official communication. It was resolved that the Society communicate with the Department of Health on the question and that the matter be further discussed with the Guild and Pharmaceutical Defence Ltd.

College Curriculum.—A report of proposed changes in the curriculum submitted by the Dean was tabled. As members had not had an opportunity of studying this it was resolved that consideration be deferred until the next meeting.

Financial.—The Hon. Treasurer submitted the monthly financial statements, and accounts totalling £9024/15/10 were passed for payment. The Hon. Treasurer also tabled details of a claim for the first progress payment of £29,000 for the new College, and intimated that this would be forwarded under cover of a certificate from the Architects to the Chief Architect of the Government.

Supplementary Examinations: First and Second Years.—The Secretary reported that in accordance with the decision of the Council advice had been sent to Masters of all apprentices concerning results obtained at the first year examinations. Similar information about results of second year mid-year examinations would be sent at an early date.

Mr. Oxley raised the question of conditions under which students would in future be permitted to pro-

ceed to advanced years. The Secretary said that students had been notified of the Council's decision and the matter had been well publicised. The Council had decided that students who did not succeed in passing in the required number of subjects for first and second years would be required to repeat those years. Those who passed in a specified number of subjects could be admitted to a supplementary examination which would be held in February. If they passed this examination they would then be eligible to proceed to the next year, but if they failed, would be required to repeat the full year.

Mr. Oxley said it was important that everyone concerned should be aware of the conditions.

Animal Health Week.—Mr. Baird reported that he had attended a meeting of representatives of various companies and organisations called to consider the proposal for conducting "Animal Health Week." There was not a great deal to report at this stage. A further meeting would be held in February, 1959.

Mr. Taylor said he was present at the meeting. Most of the representatives were unable to commit their organisations or firms. The proposal was in the embryonic stage, and progress had been recorded. The Chairman thanked Mr. Baird for his report.

Message of Sympathy.—Mr. Long referred to the tragic death of Mr. Davies, a son-in-law of their President, during the month. Members expressed their deep sympathy and resolved that an appropriate message be conveyed to Mr. Scott.

Pharmaceutical Association.—A circular was received from the Pharmaceutical Association drawing attention to the arrangements for the next meeting, which would be held in Adelaide, from May 25 to June 2, 1959. A request was made that organisations consider items to be submitted for inclusion in the agenda and that an indication be given as early as possible of the number of delegates likely to attend. Arrangements had been made for reservation of suitable accommodation.

The meeting then terminated.

THE P.D.L. — *Directors' Meeting*

The 406th meeting of the Directors of Pharmaceutical Defence Limited was held at "Guild House," 18 St. Francis Street, Melbourne, on October 15, at 9.45 a.m.

Present.—Mr. E. W. Braithwaite (in the chair), Messrs. I. H. Barnes, N. C. Cossar, D. A. Lees, E. A. O. Moore, N. V. Orr, J. W. Pollock and the Secretary.

Correspondence.—Formal correspondence was tabled and the following were amongst the letters dealt with:

To Mr. Eric Scott, conveying sympathy in recent family bereavement.

From Mr. J. D. Syme, of Herberton, North Queensland, stating that he wished to obtain fire insurance cover over stock, fixtures and fittings in his pharmacy at Herberton. Enquiry referred to Queensland Branch, and Mr. Syme informed accordingly.

From the Pharmaceutical Association of Australia, advising that the next meeting of the Association would be held in Adelaide from May 25 to June 2, 1959. The Chairman said the participation of P.D.L. in the next conference could be considered at the February meeting.

A country member reported that an Inspector for Pensioner Benefits had visited his pharmacy and a test prescription had been dispensed. He believed his dispensing would be in order, but sought advice. The member was referred to the position of P.D.L. in relation to N.H.S. and P.M.S. dispensing, as published on page 826 of the July issue of the Journal.

It was reported that Annual Returns and accounts of the Branches were all to hand with the exception of those from Queensland (due October 16), and the Annual Report and signed accounts from the N.S.W. Branch. Mr. Orr said the N.S.W. Branch report would be completed over the next week-end.

Pharmaceutical Defence Limited

FORTY-SIXTH ANNUAL MEETING

Notice is hereby given that the 46th Annual Meeting of members of Pharmaceutical Defence Limited will be held at the registered office of the Company, at "Guild House," 18-22 Saint Francis Street, Melbourne, on Wednesday, November 26, 1958, at the conclusion of an Extraordinary General Meeting* which is hereby called for 9.30 a.m. on the same date, when the attendance of members is respectfully requested.

BUSINESS

1. To confirm the minutes of the 45th Annual Meeting.
2. To receive and adopt the Annual Report and Balance Sheet.
3. To elect two Directors. The retiring Directors are Messrs. Daniel Alexander Lees and John William Pollock, who are eligible for re-election and have offered themselves accordingly.
4. To elect Auditors and fix their remuneration. Messrs. Osborn, Fenwick & Co. are the retiring Auditors. The only nomination received is in favour of Mr. Thos. E. Osborn.
5. Subject to the approval, at an Extraordinary General Meeting to be held on November 26, 1958, at 9.30 a.m., of a new clause (f) in Article 4 of the Articles of Association, to consider and, if thought fit, approve a recommendation from the Directors that the following persons be elected as Honorary Life Members of the Company, namely Mr. Cuthbert Charles Wallis, of Victoria, and Mr. Henry Daniel Blandford Cox, of New South Wales.
6. To consider and, if thought fit, approve a recommendation from the Directors that the sum of four thousand pounds (£4,000) be contributed as a donation to the Victorian College of Pharmacy War Memorial Building Fund, specifically for the purpose of providing the seating accommodation in the Assembly Hall of the new College of Pharmacy, such amount to be made available from Head Office (Victoria) current account at the rate of one thousand pounds (£1,000) per annum during the four financial years, ending September 30, 1961.
7. To transact any other business, due notice of which shall have been given.

Dated at Melbourne this 15th day of October, 1958.

By order of the Board, T. G. ALLEN, Secretary.

* An Extraordinary General Meeting will be held at 9.30 a.m., immediately prior to the Annual General Meeting on November 26, to consider and, if thought fit, adopt amendments to the Articles of Association.

P.D.L.

Chemists' Indemnity Insurance covers up to

£25,000

available

Details of other general insurances available on request to:

PHARMACEUTICAL DEFENCE LIMITED

HEAD OFFICE: Fourth Floor, "Guild House," 18-22 Saint Francis Street, Melbourne. Phone: FB 3774 (General Secretary, T. G. Allen.)

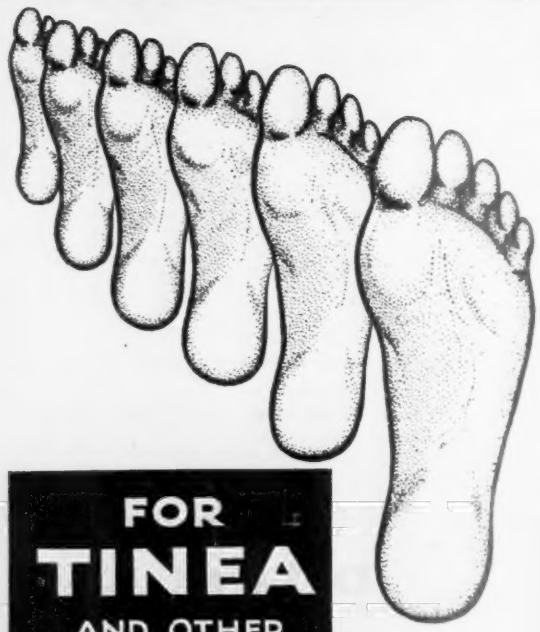
N.S.W.: 53 Martin Place, Sydney. (Branch Secretary, C. Carlisle.)

QUEENSLAND: Drysdale's Chambers, 4 Wickham Street, Brisbane. (Branch Secretary, Miss D. Brighouse.)

SOUTH AUSTRALIA: Churchill Building (First Floor) 61-63 Gawler Place, Adelaide. (Branch Secretary, O. H. Walter.)

WESTERN AUSTRALIA: C/o Technical College, St. George's Terrace, Perth. (Branch Secretary, F. W. Avenell.)

UNDEX



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MELBOURNE

VICTORIA—*Continued*

Inquiry was made by the South Australian Branch concerning investment of surplus funds. Mr. Cossar said he favoured the purchase of Commonwealth Bonds. The Directors concurred, and it was further resolved that an amount of £100 loaned many years ago to the South Australian Branch be confirmed as a donation to the Branch.

The correspondence was received.

New Members Elected.—Frederick D. Barker, Burwood; Robert J. Constable, Pascoe Vale; Mrs. Valerie Constable, Pascoe Vale; John L. Fleming, Richmond; Mrs. Janet M. Fry, Braybrook; Mrs. Pauline E. M. Newton, North Balwyn; Mrs. Pauline E. Powell, Rye; Geoffrey J. Lowe, Tottenham; Ronald K. Patterson, North Richmond; James L. Powell, Rye.

The Secretary reported that Mr. Frank Ryan, a member of the Western Australian Branch, had transferred to Victoria. He had purchased the pharmacy of Mr. L. F. Howard, at Brunswick.

Journal Report.—Mr. Cossar reported briefly on business dealt with at the meeting of the Committee of Management of the Journal held on October 13.

Legal Advice.—An enquiry regarding an apprentice who transferred from another State had now been dealt with by the Solicitor.

Two inquiries concerning leases or tenancies had been answered, and two more were in the hands of the Solicitor for his advice.

The position of a chemist as regards Long Service Leave on the death of an employee who had served both the member inquiring and his predecessor was raised in an enquiry from a member. The Solicitor advised that the member was liable for long service pay, the relevant section being 155(3). The rate of pay would be at the present rate of pay, not the award rate. The amount should be paid to the solicitors for the estate, who should produce to the member what was called a Section 14 Certificate. From the amount of pay due, the member should deduct a sum equal to 1/- in the pound as wages tax. Further publicity to be given to this matter.

Claims.—There had been no further advice concerning a claim against a member in another State.

A member on discovering an error on the part of his apprentice had taken steps to correct the position.

Annual Report.—The draft Annual Report for the year 1957-58 was then reviewed and endorsed, subject to the incorporation of minor alterations and the addition of a paragraph acknowledging the excellent services of the staff during the past year. It was also agreed that acknowledgment be made of the very careful attention given to legal enquiries on behalf of members by the P.D.L. Solicitor.

Names and Addresses of Prescription Customers.—The Chairman initiated a discussion on the necessity not only to enter details of counter prescriptions in the prescription book, but also to record the names and addresses of people for whom such items were dispensed. The wisdom of this procedure was evident should a mistake have occurred, because the person could then be traced readily without broadcast publicity disadvantageous to pharmacy as a whole as well as to the member and his staff. It was decided that further publicity on this subject be sought through the monthly bulletin of the Pharmaceutical Society of Victoria.

Financial.—The Hon. Treasurer presented the monthly financial statement, which showed a credit balance of £3588/15/10. Accounts totalling £1870/11/11 (including £477/1/1 for transfer to the Special Reserve Fund) were passed for payment.

It was resolved that provision be made in the accounts for the year 1957-58 for the transfer of an additional amount of £100 to the reserve for long service leave.

It was further resolved that it be a recommendation to the Annual Meeting that the sum of £4000 be contributed as a donation to the Victorian College of

Pharmacy War Memorial Building Fund, specifically for the purpose of providing the seating accommodation in the Assembly Hall of the new College of Pharmacy, such amount to be made available from the Head Office (Victoria) current account at the rate of £1000 per annum, during the four financial years ending September 30, 1961, and that provision be made in the accounts for the year 1957-58 for the first of these payments.

The manner of handling Commonwealth Loan holdings now matured or about to mature was also decided.

Questions at N.S.W. Zone Meetings: Scope of Indemnity Policy.—Mr. Orr said a feature of his addresses at Zone meetings in Sydney had been the questions asked at the conclusion of his remarks. One matter brought out at these meetings was the fact that the P.D.L. Chemists' Indemnity Policy, although it covered injuries to human beings and to animals and included inherent defect or vice in any goods supplied, did not extend to cover damage to inanimate objects. Instances were stains to a bath or spray damaging trees in an orchard.

The Chairman said the Directors had had experience of claims of this type, but advice from the insurance company was that there were legal and practical difficulties against extending the scope of the policy to include direct cover against such claims. However, each claim was considered on its merits, and several ex gratia payments had been made under this heading.

The meeting closed at 1.40 p.m.

THE GUILD

S.B.C. Meeting

The State Branch Committee of the Victorian Branch of the Guild met at "Guild House," 18 St. Francis street, Melbourne, on October 7, at 8 p.m.

Present.—Mr. N. F. Keith (President), Chairman, Messrs. K. L. C. Davies, F. H. Bedford, J. W. D. Crowley, A. K. Lloyd, A. O. C. Blake, C. M. Waters, J. K. Gosstray, S. M. Adams, G. W. Siebler, M. J. Miles, J. T. DeRavin, W. L. Hilyard, H. Marks, G. Carter, R. Grinlington, H. C. B. Henshall, J. F. Oaten, J. D. Clarke, D. L. McColl, C. I. Molloy, Miss R. McGillivray and the Secretary (Mr. W. J. Wright).

Notice of Motion.—Mr. Marks moved that S.B.C. meetings be held three times a year during the day time during the months of March, July and October, during the hours from 9 a.m. to 1 p.m. and 2 p.m. to 5 p.m., and during the other months of the year the meetings be held at night as usual. This motion was seconded by Mr. Bedford.

Mr. Davies moved that the motion be deferred pending a report from the Finance Committee. The motion of deferment was seconded by Mr. Miles and carried.

Mr. Blake moved that when the matter is discussed by the Finance Committee, it be considered whether, if three such meetings a year are not possible, a lesser number could be held. This motion was seconded by Mr. Hilyard and carried.

Indisposition of Members.—It was reported that Mr. J. I. Richards was in the Freemasons' Hospital, and the meeting decided that a card should be sent to him.

It was also reported that Mr. J. Garvin was ill and that he had submitted his resignation from the S.B.C. Mr. Adams moved that in the circumstances the resignation be accepted with sincere regret and reluctance. Miss McGillivray seconded the motion, which was then carried. It was decided that a card should also be sent to Mr. Garvin.

Delegate District No. 6.—The resignation of Mr. Garvin left this position vacant. Mr. Henshall moved that Miss R. McGillivray be elected as delegate for the remainder of Mr. Garvin's term of office. Mr. Bedford seconded this motion, which was carried.

The Chairman declared Miss McGillivray elected and remarked that this was the first occasion in the history of the S.B.C. that a woman was numbered amongst its

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VICTORIA—*Continued*

members. Miss McGillivray thanked the meeting for the action taken and stated that she would do her best in the position.

Executive Report.—The Executive report was adopted on the motion of Mr. Lloyd, seconded by Mr. Adams.

Correspondence.—From Mr. L. Hamon and Mr. A. K. Lloyd, thanking the Committee for honorary membership.

A letter from P.A.T.A. was considered in conjunction with a report from Mr. Henshall. Mr. Miles moved that Mr. Henshall's report be considered by the Trade and Commerce Committee. Seconded by Mr. Davies and carried.

Copies of correspondence between Bristol Myers Co. Pty. Ltd. and the Federal Merchandising Service under cover of a letter from the Federal Merchandising Service were read, giving information of steps to be taken by Bristol Myers and P.A.T.A. to tighten up the control of the distribution of Ipana and Ingrams.

From Sigma Company Ltd., seeking a donation from the Guild for Animal Health Month. After discussion, the request was referred to the Finance Committee.

From the Victorian Federation of Retailers' Associations, seeking Guild opinion on the proposal to alter the present banking hours. Mr. Blake moved that the Federation be notified that the Guild is opposed to any curtailment of hours. Mr. Miles seconded the motion, which was carried.

The reply from H.B.A. regarding the request for receipt books to be issued in triplicate, that this was not considered necessary, was accepted on Mr. Crowley's motion, seconded by Mr. Grinlington.

From the National Brush Co. (Aust.) Ltd., notifying details of a special bonus and discount offer.

From West Australian Branch, requesting that consideration be given to some method of publicising the A.P.F. It was resolved that this matter be referred to the Executive for consideration.

Federal Report.—In the absence of the Federal President, the Chairman reported that the Federal Secretary had applied to the Repatriation Department for a new schedule on a basis agreed upon by the Federal Executive.

Pricing Committee Report.—The report of the Pricing Committee as outlined in minutes of the meeting held on September 16 was adopted.

Medico Pharmaceutical Liaison Committee. — Mr. Adams reported that this Committee had met on October 6 and gave details of the questions discussed and the resultant decisions. He added that these would be contained in the minutes of the meeting to be submitted later.

New Members Elected.—Mr. and Mrs. R. J. and V. Constable, Pascoe Vale; Messrs. J. V. Guthrie, Camperdown; R. K. Patterson, North Richmond; R. G. M. Ward, South Box Hill; G. J. Lowe, Tottenham; R. L. Clarey, Melbourne; F. Ryan, Brunswick; and J. A. Daniel, Templestowe.

Re-entered: Mr. L. J. Romey, 74 Malop street, Geelong.

Branches.—The following branches were recorded:—Mr. A. S. Cattanach, 108 Millers road, Paisley; Mr. B. A. Scally, 627 Riversdale road, Surrey Hills.

District Reports.—The following were amongst the reports dealt with:—

District No. 14: It was decided to refer to the Trade and Commerce Committee the district's request that a ruling be given on Guild policy concerning the attitude to be adopted by members towards merchandise offered by firms who are supplying the same lines to factories and garages, etc., at wholesale or near wholesale prices.

District No. 19:

"Gilseal" Rusks.—It was advised that the complaint on quality was being attended to.

Chemist Only Lines.—It was stated that the Merchandising Service will issue a list shortly.

The meeting closed at 12.15 a.m.

"P.P. GUIDE"—1959

(Prescription Proprietaries Guide for Doctors and Chemists)

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QUEENSLAND

PERSONAL *and* GENERAL *State News*

Members desiring publication of personal items of interest are invited to write or telephone details to the Journal Correspondent in Queensland, Miss D. Brighouse, 'phone B 8407.

After an extended holiday in the southern States, **Mr. F. B. Hoskin** has returned to his pharmacy at Surfers' Paradise.

Mr. F. J. Behan, of Ayr, enjoyed a trip to Japan on the "Orsova" during the month. During his absence, **Miss Ebneter** was in charge of Mr. Behan's pharmacy.

Mr. J. W. McElhinney, who has occupied pharmaceutical positions in Victoria and New South Wales for some years, has returned to Queensland, having bought the pharmacy of the late Mr. J. A. Costin at Mareeba.

ENGAGEMENTS

Miss Jennifer Delahunty, daughter of Mr. and Mrs. J. J. Delahunty, St. Lucia, announced her engagement during the month to Mr. Terry Parer, who recently acquired the pharmacy at St. George.

Another engagement of pharmaceutical interest was that of **Mr. A. B. Wuth,** of Ascot, whose fiancee is Miss Margaret A. Holmes, of Toowoomba.

WEDDINGS

September-October has been a popular time of the year for weddings of pharmaceutical interest.

On September 20, at St. Andrew's Church of England, South Brisbane, **Mr. Peter Burrows,** Newmarket, was married to Miss Lorna Skellern, of Yeerongpilly.

Also at St. Andrew's Church, South Brisbane, on September 25, **Miss Joan Phillips,** of Auchenflower, was married to Mr. Toby Rigby, of Cracow Station, Cracow.

September 27 was the date chosen by **Miss Elizabeth Anne Tomlinson,** of Ascot, who was married in St. Augustine's Church of England, Hamilton, to Mr. William Peters, of "Laidlaw," Longreach.

On the same day the marriage took place at St. Matthew's Church, Grovely, of **Mr. Darryl Storie,** of Gaythorne, whose bride was Miss Merle Matheson, of Grovely.

On October 18, at St. Mary's Church of England, Kangaroo Point, **Mr. Brian Gordon,** of Southport, was married to Miss Judy Emerson, of Coorparoo.

Congratulations and best wishes for the future!

MEDICINE PRICES

The Minister for Health, Dr. Noble, said in Parliament on August 20, that the fact that price de-control of drugs, chemicals and pharmaceutical prescriptions was not at present justified did not mean that the Government would not re-control later if this became necessary.

He was replying to Mr. Donald (A.L.P.—Bremer).

Mr. Donald asked whether a claim that profits on medicines had increased greatly since de-control in 1953 had been investigated.

Dr. Noble said that in November last year the Prices Advisory Board had advised that these items be brought back under control. He had arranged for the Pharmaceutical Guild to be called upon to show cause why control should not be introduced. More detailed investigation took place and certain modifications were made in charges from May 1, 1958.

THE CHEMISTS' BOWLING CARNIVAL

The Annual Queensland-New South Wales Chemists' Bowling Carnival was successfully staged in Brisbane from September 14 to 19. Queensland retained the D.H.A. Cup.

On the system of scoring adopted by both States results of the tests were as follows:—

	Queensland	New South Wales
1st Day	2 rink wins 2 pts.	3 rink wins 5 pts.
2nd Day	3 rink wins 5 pts.	2 rink wins 2 pts.
3rd Day	3 rink wins 7 pts.	2 rink wins 4 pts.
	8 rink wins 14 pts.	7 rink wins 11 pts.

The aggregate points scored totalled:

Queensland	365
New South Wales	350

It is expected that the return visit to Sydney will take place in October, 1959.

PRETROLEUM PRODUCTS—PRECAUTIONS IN SALE

Press reports indicate that the Queensland Government has decided to introduce a law under which petroleum products such as kerosene, will be declared as dangerous products. This is stated in the annual report of the Queensland Health Education Council tabled in Parliament.

The report state that legislative provision will be made for marketing these products "so that the public is aware of the need for careful storage."

Other items referred to are floor polishes, weed killers, caustic and similar substances.

LIFE MEMBERSHIP OF PHARMACEUTICAL SOCIETY

The annual meeting of the Pharmaceutical Society of Queensland, on September 25, unanimously endorsed the recommendation submitted by the Council that Hon. Life Membership be conferred on **Mr. R. S. F. Greig.** Prior to his retirement from the Council in 1957, Mr. Greig had been a member for a number of years, having held office as president during his service as a councillor.

NEW PRESIDENT OF PHARMACEUTICAL SOCIETY

At the October meeting of the Council of the Pharmaceutical Society of Queensland, **Mr. G. R. Wells,** of Wells' Pharmacy, Adelaide Street, Brisbane, was elected President of the Society, the former President, Mr. L. A. Stevens, having retired from the Council.

After attending the Brisbane Grammar School, Mr. Wells was apprenticed to the late Mr. Thomas Gaydon, at Childers. Qualifying from the Queensland College of Pharmacy in 1932, Mr. Wells opened a pharmacy at Tweed Heads in 1933. Early in 1940 Mr. Wells sold this pharmacy and joined the 2/25 Australian Infantry Battalion, seeing service in the Middle East and New Guinea. After the war Mr. Wells, in conjunction with Mr. E. J. Belford, founded Wells' Pharmacy in Adelaide Street, which they conduct today.

Mr. Wells has been a member of the Council for four years and he is also keenly interested in R.S.L. and Brisbane Rotary Club.

QUEENSLAND—*Continued*

Mr. J. S. D. Mellick will ably support Mr. Wells as Vice-President of the Council during the coming year, and **Mr. J. E. McCaskie,** has been reappointed honorary treasurer of the Society—a position he has held for the past two years.

NEW MEMBER GUILD STATE BRANCH COMMITTEE

Mr. N. E. Edmiston, of Nambour, has accepted an invitation to join the State Branch Committee of the Guild.

Mr. Edmiston was apprenticed in 1939 to the late Mr. K. M. Dupuy, of Mackay. In 1942 he joined the R.A.A.F., and served four years as Air Crew (Navigator). Mr. Edmiston qualified as a pharmacist in 1948, and for several years following undertook relieving duties in Brisbane and many country centres. In 1951 he opened a pharmacy in Nambour, and three years later moved to larger premises.

Mr. Edmiston is a keen merchandiser, and in 1954 and 1955 had the honour of being awarded the first prize in Australia for the Guild-Colgate Display and Merchandising Competition. Mr. Edmiston has felt an interest in sales management. In 1953 he was admitted an "Associate of the Australian Institute of Management," and in 1955 an "Associate of the Institute of Sales Management."

As a relaxation from pharmacy, Mr. Edmiston is a President of the Nambour Junior Chamber of Commerce, and is also a foundation member of Nambour Rostrum.

It is hoped that his association with the State Branch Committee in this State will prove both pleasurable and profitable.

QUEENSLAND CHEMISTS' GOLF CLUB

Golfers from Toowoomba and surrounding towns were hosts at Middle Ridge Golf Club for the first challenge match, Brisbane Chemist Golfers versus the Darling Downs Chemist Golfers. The teams match was ten each side, and played on an aggregate points system. Results were as follows—

Brisbane	points	Toowoomba	points
N. Moore	38	C. Rye	37
A. Asprey	33	P. Hill	34
H. Evans	30	R. Sellars	26
P. Seeney	30	B. Cooney	24
I. Brusasco	29	T. Doyle	23
B. Benjamin	25	B. Croft	21
M. Lawton	26	J. Stitt	21
Mrs. Evans	23	G. Cain	20
Mrs. Seeney	6	D. Moreton	17
B. Cowan	19	B. Osbroune	11
Total	259	Total	234

The Queensland Chemist' Golf Club, on behalf of all members, thank their friends on the Downs for an excellent day's outing. Particular mention is made of Peter Hill (D.H.A., Toowoomba) for an excellent job of organising.

Game at Nudgee

Only a few strokes separated half a dozen golfers in both A Grade and B Grade at the Chemists' Golf Outing held at Nudgee Golf Links on October 12.

The four-ball event was won with a record of 63 points, and as will be seen from the results shown below (the final outing will be at Oxley on November 23), the winners of the Kenneth Mitchell Cup and the Queensland Chemists' Shield (both finals will be played on November 23) becomes even more difficult to pick.

Results at Nudgee were as follows:—

Four-ball Event—John Lehmhase and Les Cadzow, 63 points.

A Grade—Bert Asprey, 33 points
B Grade—Bert Benjamin, 34 points.
Nearest the Pin—Bert Asprey.
Associates—Shirley Trotter, 29 points.
Putting—Les Cadzow.

Keep These Dates in Mind

Grand final outing at **Oxley** on November 23.
Australian Carnival—Melbourne, February 22 to 27, 1959.

PHARMACEUTICAL SOCIETY — *Council Meeting*

The Council of the Pharmaceutical Society of Queensland met at Drysdale's Chambers, 4 Wickham Street, Brisbane, on October 9.

Attendance.—Misses E. Chalmers, G. Elliot, Messrs. G. R. Wells, A. B. Gainford, J. S. D. Mellick, R. V. Martin, G. Caswell, I. M. Young, J. McCaskie and the Secretary.

Election of Officers.—The Vice-President, Mr. Wells, vacated the chair, and asked the Secretary to call for nominations for the position of President for the ensuing year.

President.—Mr. Mellick said he had pleasure in nominating Mr. G. R. Wells. Seconded by Miss Chalmers. There being no other nomination, Mr. Wells was duly elected President of the Society.

On resuming the Chair Mr. Wells thanked the members for his election as President of the Society. He said he felt the coming year would be a very busy one, with important developments, no doubt, in connection with pharmaceutical education; but with the co-operation and help of his fellow councillors he looked forward to a very happy and interesting term of office.

Vice-President.—Mr. J. S. D. Mellick was elected, unopposed.

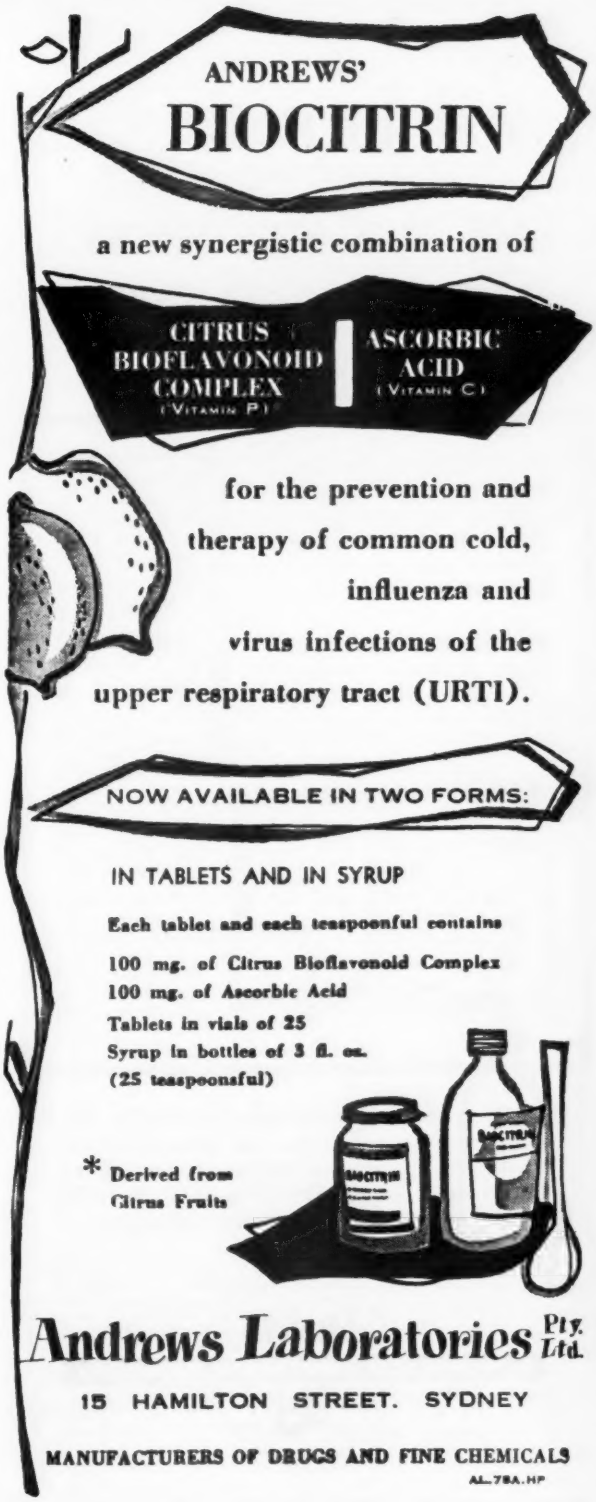
Treasurer.—Mr. J. McCaskie was re-elected, unopposed.

Personnel for Various Sub-committees.—The President said he and the Vice-President would study the sub-committees which were appointed last year, and at the next meeting would submit their recommendations for the coming year.

Christmas Function.—Mr. Wells said he had contacted the proprietor of the kiosk at Mt. Coot-tha and had arranged that the society Christmas function be held at Mt. Coot-tha on Tuesday, December 9. He had asked that this year's function be on the same basis as last year. Mr. Wells recommended that the Secretary confirm these arrangements.

The Secretary said the subscription last year for the Christmas function was 30/- per person.

Correspondence.—To the manager, 4BK and 4AK Broadcasting Stations, advising that a pharmacist has had handed to him by a customer a letter which he had received from "Medical Mother," in which the patient is recommended to take Dexedrine, Phetadex or Preludin. Pointing out as pharmaceutical chemists are bound by law to supply restricted drugs only on a doctor's prescription, the procedure adopted by "Medical Mother" in recommending such preparations was one of which this society wholeheartedly disapproved. Requesting that the society may have the station's co-operation in having such a recommendation discontinued. —Reply, advising that all scrips by "Medical Mother" were approved by the Director-General of Health, Canberra, before broadcast. Stating that they would request "Medical Mother" to state in her letters if a doctor's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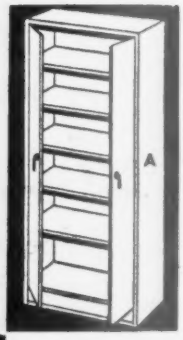

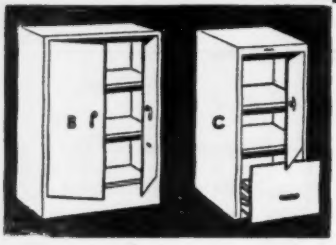

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QUEENSLAND—*Continued*

prescription is required for any medicines she might suggest.

To Mr. C. A. Nichol, conveying the congratulations of the President and Councillors and their very best wishes for his years of office as State President of the Queensland Branch of the Guild. The Council feels that he is well groomed for his new office and it wishes him every success for the years that lie ahead.—Reply, expressing appreciation and thanks for the congratulations extended and stating he looks forward to a continuance of the happy relations and close association with the Society during his term of office as President of the Guild.

To Mr. E. F. Laws, Department of Labour and National Service, advising that the Council considered the booklet, "Choosing Pharmacy as a Career," a very well prepared booklet. Pointing out that this Society, in collaboration with the University of Queensland, has been able to establish within the University a Fellowship Course for pharmaceutical chemists who are members of this Society. It was suggested that when the booklet was being reprinted at some future date, this information might be included.

To the Pharmaceutical Society of Great Britain, expressing appreciation for the information which has been made available concerning publications required for the Fellowship Course inaugurated by the Society in this State. Also advising that the Centenary Commemoration Book has come to hand and conveying the Council's thanks for having made this available.

From Pharmaceutical Association of Australia, in regard to Civil Defence School at Macedon, Victoria, from November 30 to December 5.

From Pharmaceutical Public Relations Secretariat, forwarding copy of letter sent to the Science Teachers' Association concerning "Children and Home Experiments."

From Pharmaceutical Association of Australia, advising the next conference will be held in Adelaide from May 25 to June 2, 1959.

Poisons Regulations for 1958 as gazetted on September 15, 1958, were tabled. Mr. Young said he had prepared a synopsis of the new regulations which would occupy the whole of the next issue of the Bulletin. He had checked the material with Mr. Kelly, the Chief Inspector of the State Health Department, to make sure that everything was correct.

New Member Elected.—Mr. R. G. Kalaf, Nolan's Pharmacy, Rosewood.

Reports were presented on recent pharmaceutical publications by Miss Elliott, Mr. Caswell and Miss Chalmers.

Pharmacy Board.—Mr. Martin reported there had been a special meeting of the Board on September 30 to deal with the final amendments to the Pharmacy Act.

Liaison Committee.—Mr. Mellick said members had received a copy of the minutes. The Minister had acknowledged receipt of the amendments to the Pharmacy Act which had been submitted by the Society and the Guild, and Mr. Wells and he would be interviewing the Minister on October 21.

Following the Liaison Committee Meeting, the Secretary had written to the "Courier-Mail," intimating how it was proposed the Society and Pharmacy might work in with the State celebrations of the Centenary of the State in 1959. On receipt of the communication from the Secretary, Mr. Garnsby, of the "Courier-Mail," had telephoned, pointing out that the "Courier-Mail" did not allow its window to everyone who asked, but on this occasion they would give it, provided a very worthwhile window display could be provided. The date tentatively set was a week from September 4, 1959. Mr. Mellick said we would have to be sure that pharmacy as a profession had a very good window display, seeing the "Courier-Mail" had generously loaned the window for a week.

Mr. Mellick said it would seem that quite a lot of discussion on pharmaceutical education took place at the Liaison Committee meeting. He said at this meeting Mr. Stevens made his farewell from official pharmacy.

Letter of Appreciation to Past President.—Mr. Wells said he thought it would be fitting if a letter of appreciation and thanks were sent to Mr. Stevens for his services to this Council over the years. Although Mr. Stevens was not a member of the Council now, it was hoped that they would see him at functions from time to time.

Miss Chalmers moved, Miss Elliott seconded, that a letter be sent to Mr. Stevens, thanking him for his services to the Council since his co-option seven years ago. Carried.

Discussion Group.—Mr. Young reported that he had prepared a summary of the new Poisons Regulations.

The President thanked Mr. Young for his work on the new regulations, which he felt would be studied by members with interest.

Mr. McCaskie said he felt that Mr. Stevens would be only too willing to assist Mr. Young with the talk on the new regulations if a meeting of the Discussion Group was arranged.

After discussion, it was agreed that arrangements be made for the Discussion Group to meet on October 30, when Mr. Young and Mr. Stevens would provide detailed information on various sections of the new regulations.

The meeting closed at 10.30 p.m.

THE GUILD

S.B.C. Meeting

The State Branch Committee of the Queensland Branch of the Guild met at Drysdales Chambers, 4 Wickham street, Brisbane, on October 2.

Attendance.—Mr. C. A. Nichol (President), Messrs. A. W. Eberhardt, A. B. Chater, F. H. Phillips, H. Darrouzet, W. A. Lenehan, R. M. Ward, A. M. McFarline, W. E. Martin, A. Bell, L. W. Huxham, and the Secretary.

Appointment of Sub-Committees.—The President reported that the Executive had met and recommended the following Sub-Committees for the coming year:—

Pricing: Pricing Officer, Mr. A. B. Chater.

Dispensing: Messrs. A. B. Chater, F. H. Phillips. **Retail:** Messrs. A. M. McFarline, R. M. Ward. **Over the Counter:** Mr. L. W. Huxham.

Finance and Liaison: President, Vice-President, Treasurer, Mr. W. A. Lenehan.

Trade and Commerce: Messrs. J. J. Delahunty, H. Darrouzet, A. M. McFarline, L. W. Huxham.

Social and Ball Committee: Messrs. L. W. Huxham, A. B. Chater, J. J. Delahunty.

Industrial Officer: Mr. A. W. Eberhardt.

Legal Observer: Mr. W. A. Lenehan.

P.A.T.A.: Mr. J. J. Delahunty.

Co-option of Mr. N. E. Edmiston, Nambour.—Mr. Lenehan moved, Mr. McFarline seconded, that Mr. Edmiston be co-opted a member of the State Branch Committee. Carried.

"The Story of Your Guild."—Mr. Lenehan said no doubt the Secretary would furnish to every new member on his election as a member of the Guild a copy of this publication, together with a copy of the Constitution and Rules. He felt letters of congratulations should be sent to Mr. Attiwill and to the Federal Secretary, commending them on the thought behind the publication. The Committee resolved accordingly.

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QUEENSLAND—*Continued*

New Members Elected.—Messrs. A. B. Simpson, Annerley; N. C. Caris, Woolloongabba; M. Kirsner, Coolangatta; T. A. White, Woody Point; M. B. Dark, Miles; and K. E. R. Fittock, Coorparoo.

Correspondence.—To the Federal Secretary, requesting that a remit be included in the Federal Agenda for the next Federal Council Meeting, advising the unanimous recommendation of this State Branch Committee that Life Membership (Honorary) be conferred on the Retiring President of this Branch, Mr. W. A. Lenehan.

Copy of letter sent to local wholesalers by the Chairman of the Trade and Commerce Committee, Mr. Delahunty, in connection with "Gilseal Dyes" was noted. Mr. McFarline said there was a very good article in "Idle Moments" this month concerning "Gilseal" Dyes.

Mr. Nichol said he appreciated the contact Mr. Delahunty had made with the new Manager of Sanders Chemical in connection with the special drive this month concerning "Gilseal" Dyes. Already there had been a very good advertisement in the "Telegraph."

A letter had been sent to selected Guild personnel in eight suburban areas, advising that the State Branch Committee is desirous of establishing Guild Zones in the Brisbane area. Pointing out that there are now nearly 300 Guild members in the Greater Brisbane area. —The Secretary said to date she had heard from Mr. Grant-Taylor, Mr. Barnett, Mr. Gainford, Mr. Dick Gardner and Mr. Watson. Some of these had already made contact with their members in their localities. All were very keen on the suggestion for the formation of a zone. Mr. Grant-Taylor, Mr. Gainford and Mr. Watson were making arrangements for the hiring of halls, and at an early date it was hoped to arrange meetings in their respective areas.

From Federal Secretary, forwarding a ruling from the Commissioner of Taxation on the question of sales tax on prescription books. The Secretary reported that this ruling appeared in this month's "Gilseal News."

From Pharmaceutical Association, (1) stating the Department of Trade and Customs has been advised that the reduction in the allocation of rectified spirit to one gallon per month was not reasonable. In all discussions, however, it had been stated that any chemist requiring an amount in excess of one gallon per month will have no difficulty in obtaining it on making his requirements known.

(2) Memorandum advising that the next meeting of the Association will be held in Adelaide from May 25 to June 2, 1959.

Copy of letter sent by Mr. Attiwill to Science Teachers' Associations in all States concerning children and home experiments was received.

Australian Optical Industries Pty. Ltd., re the arrangement of sunglass merchandising schools in Brisbane to provide chemists and their staff with knowledge to develop the merchandising knowledge and facial fitting ability. Inquiring if it would be possible to arrange such schools in Brisbane in conjunction with the Guild. —After discussion, it was agreed that the Secretary write to Mr. Newton, of Australian Optical Industries Pty. Ltd., inquiring whether November 4 would be a suitable date for him to come to Brisbane to confer on this suggestion.

Saturday Banking and Trading.—The Industrial Registrar forwarded a copy of Notice of Motion by the Court concerning the question of abolition of Saturday bank trading and also the merits and demerits of a general abolition of trading on Saturday.

Mr. Lenehan said as an organisation the Guild should oppose the abolition of Saturday trading. He did not think that many chemists would wish to be closed on a Saturday morning.

Mr. Bell and Mr. McFarline agreed with Mr. Lenehan that it would be a retrograde step for pharmacies to close on Saturday mornings.

After discussion, members agreed that the Guild should oppose the suggestion of abolition of Saturday trading as far as pharmacy was concerned. Mr. Eberhardt was requested to contact Mr. Coneybeer, asking if he would represent this organisation at the hearing when this question was raised by the Industrial Court.

Federal Delegate's Report.—Mr. Martin reported that the Kodak Travelling Scholarship No. 4 was to be awarded for 1959. Applications were now being invited from those interested. Mr. Attiwill had forwarded to him copy of communication which he had sent to Mr. Conolly in connection with proposed Extra Medicine Schedule. Mr. Attiwill intimated that the question would be referred to the Federal Council at its Annual Meeting in October. Mr. Martin reported that from the Pharmaceutical Association he had received a copy of a letter Mr. Kent had received from the Patent Office, wherein it was advised that the names TROPIGLINE, POSKINE and TACRINE appeared in the supplementary list of approved names, published in May, 1958. Mr. Kent had also received an acknowledgment from the Director of Civil Defence in connection with a second course for members of the pharmaceutical profession.

Pharmacy Board.—Mr. Nichol reported on matters which had been engaging the attention of the Board.

Liaison Meeting.—Mr. Nichol reported that the Committee had met on the night of September 29. Consideration had been given to the co-operation of Pharmacy as a profession with the Centenary Celebrations of the State in 1959. On perusal of the minutes, members would see the various suggestions which had been brought forward.

Mr. Nichol said it was agreed that the Committee's recommendations concerning amendments to the Pharmacy Act should be forwarded forthwith to the Minister for Health and Home Affairs, Dr. Noble. This had been done, and in the letter which had been sent to the Minister it was pointed out that should he wish to discuss any points concerning the Act, representatives of the Society and Guild would be happy to meet him.

Merchandising and Federal Agenda.—Mr. Nichol said he felt that this Branch must give some consideration to the Merchandising Scheme. Mr. Martin and he, as this State's Federal Delegates, could not go to the Council Meeting without some ideas. When consideration was being given to the Federal Agenda, probably that would be the time to discuss such matters.

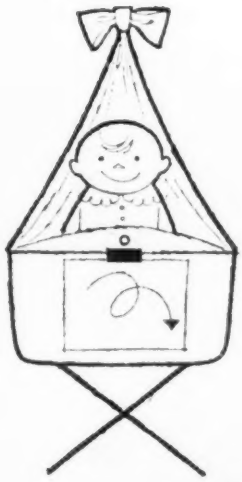
Mr. Lenehan said time was pressing on, and as the Agenda contained many important matters it could not be rushed through. In the circumstances he recommended that another night be set aside for consideration of the Federal Agenda.

After discussion, Mr. Bell moved that a Special Meeting be held on October 16 to deal with the Federal Council Agenda. Seconded by Mr. Eberhardt. Carried.

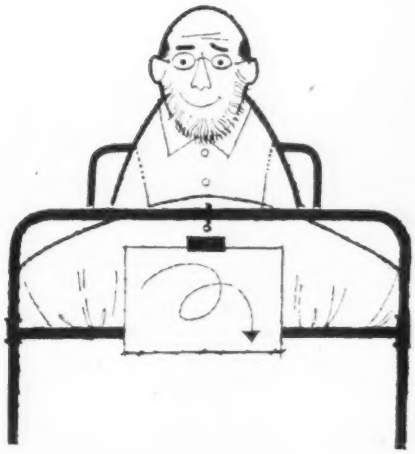
Insignia for "Chemist Only" Goods.—Mr. Nichol said he had received a telephone call from a member who suggested that some insignia or star be placed on "Chemist Only" products, and he now brought forward the suggestion for the Committee's opinion.

After discussion, it was agreed to convey the suggestion to the Merchandising Manager for consideration.

The meeting closed at 11.30 p.m.



Young and old



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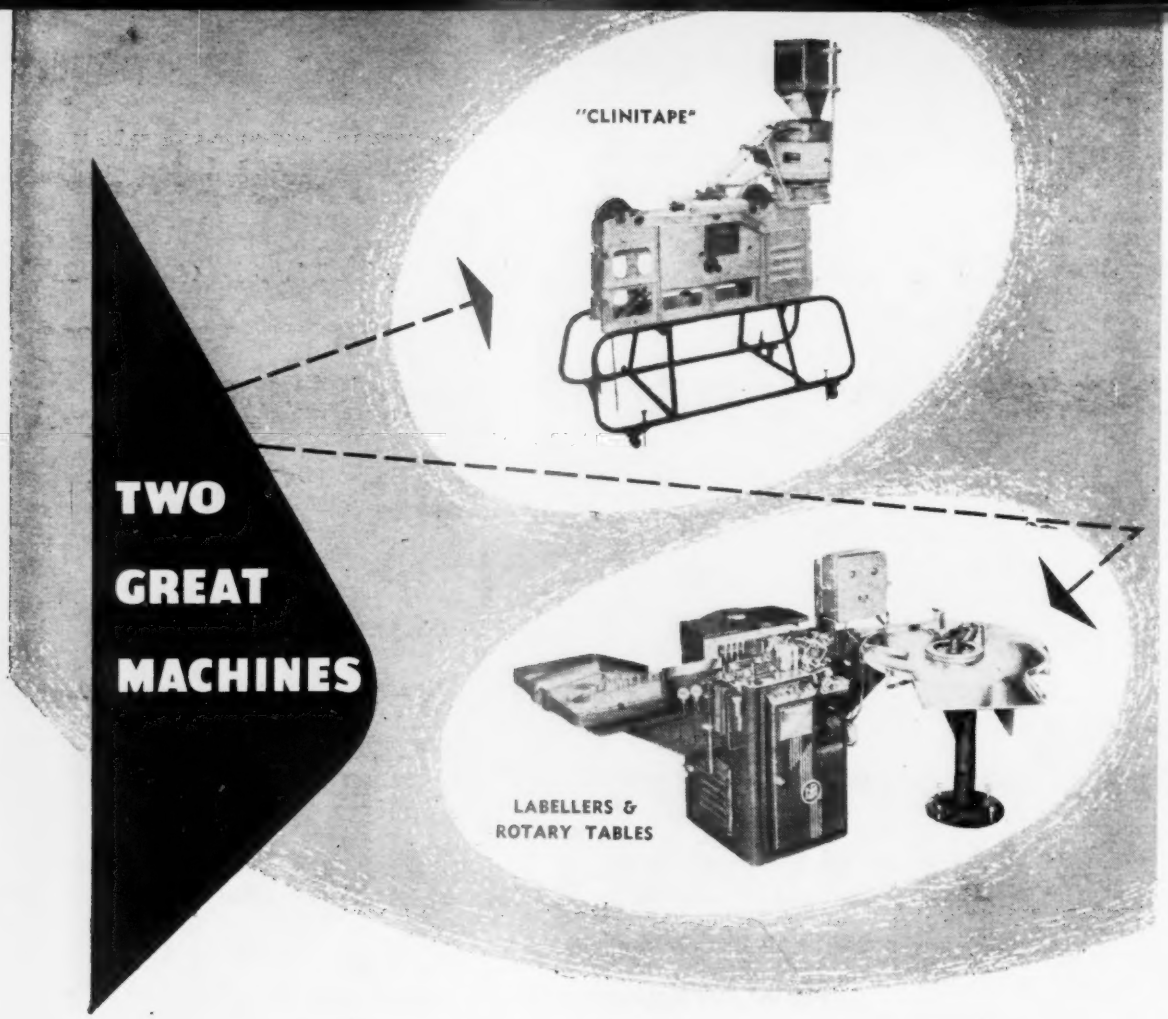

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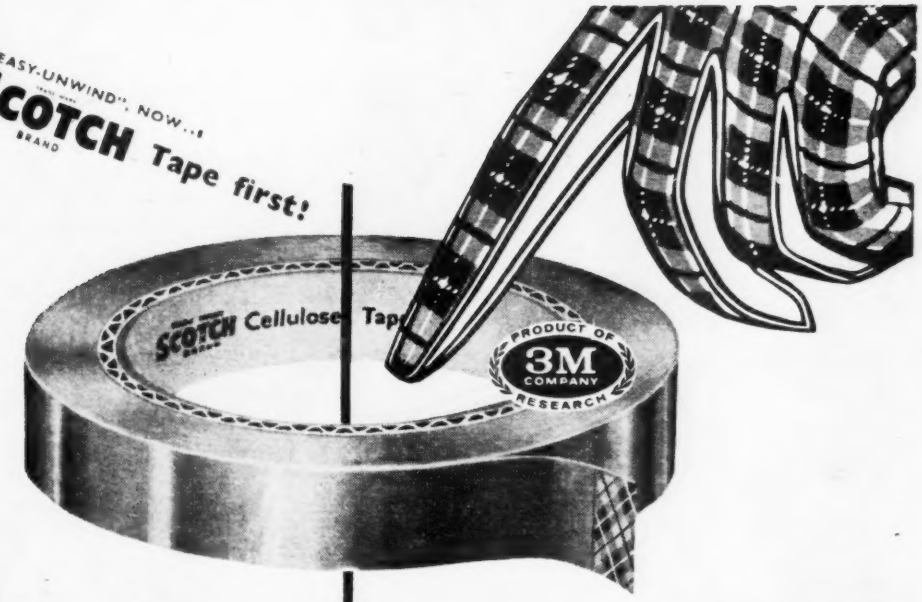

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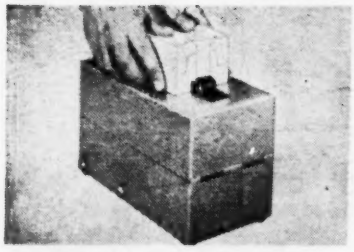

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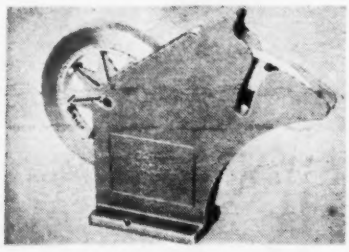

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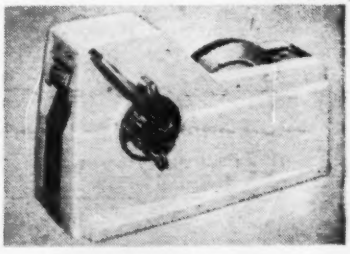

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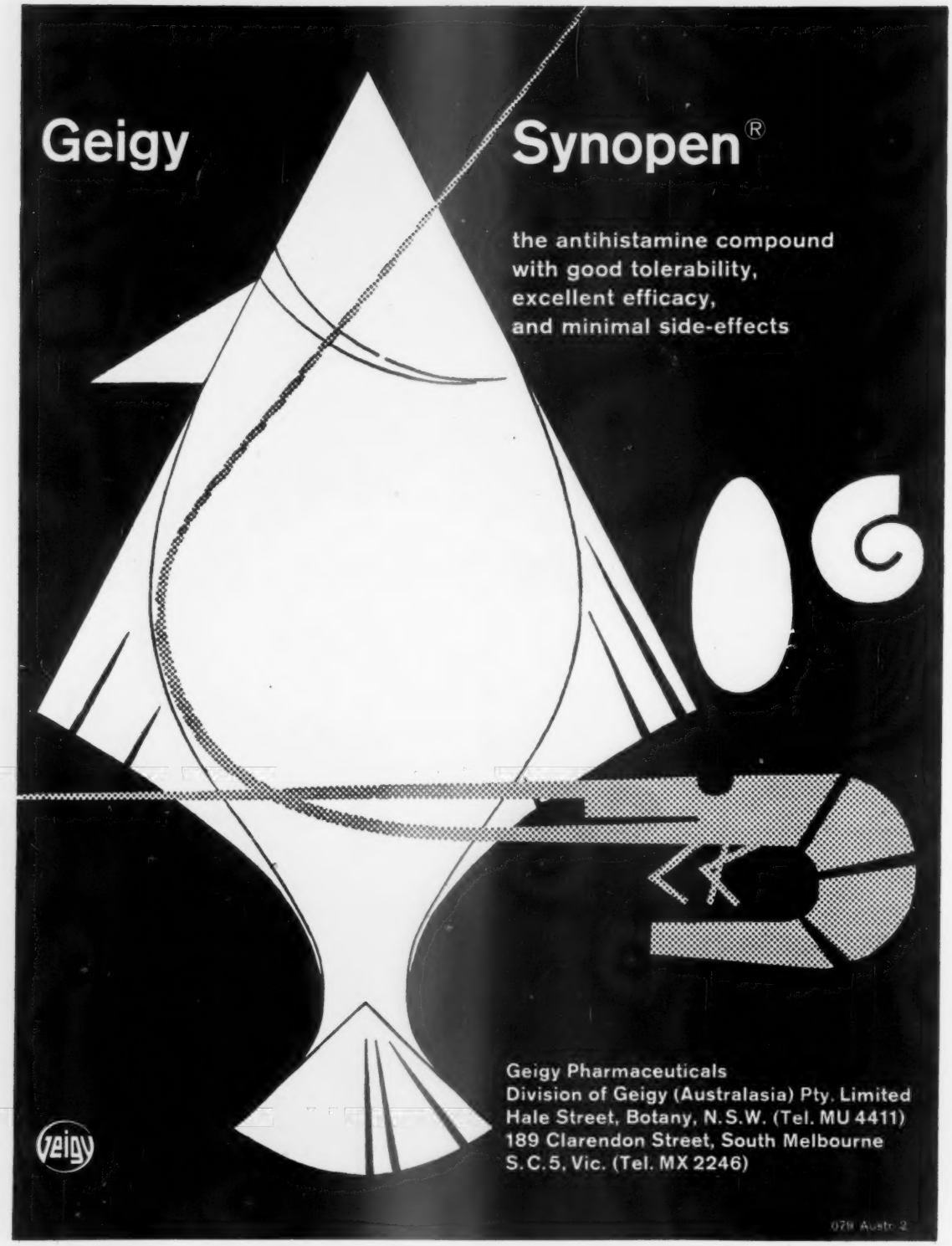
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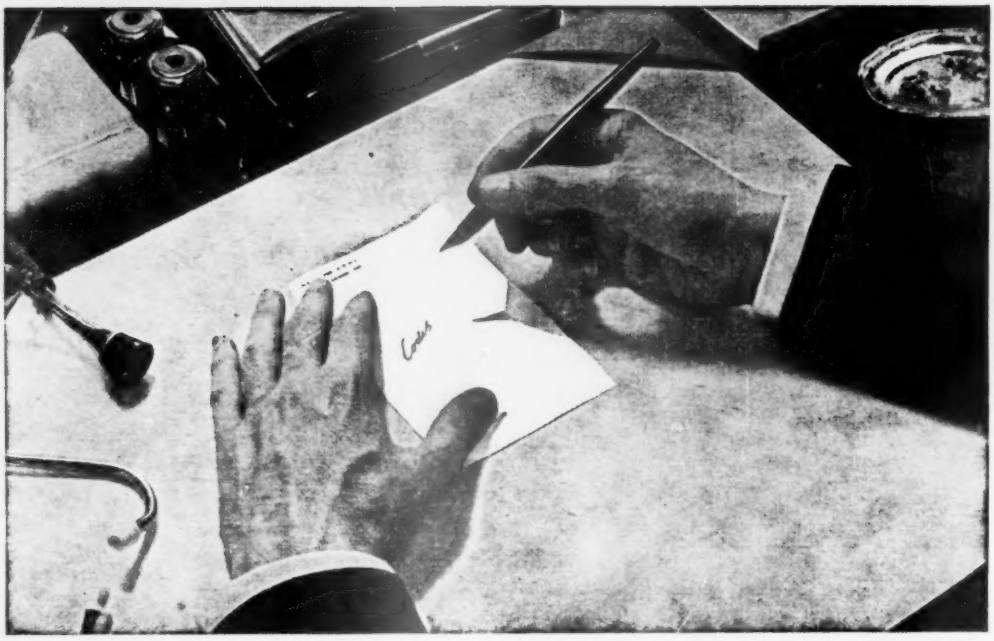

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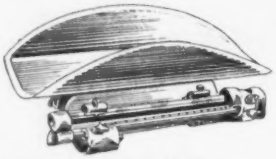

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